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HANDBOOK

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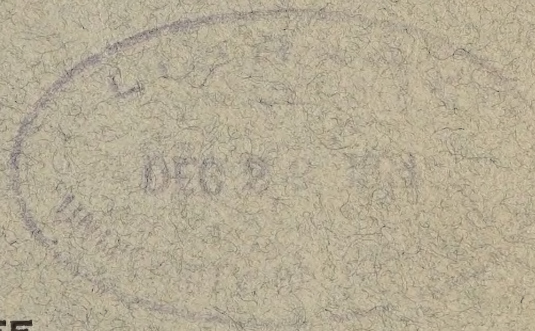
ROCKY MOUNTAINS PARK

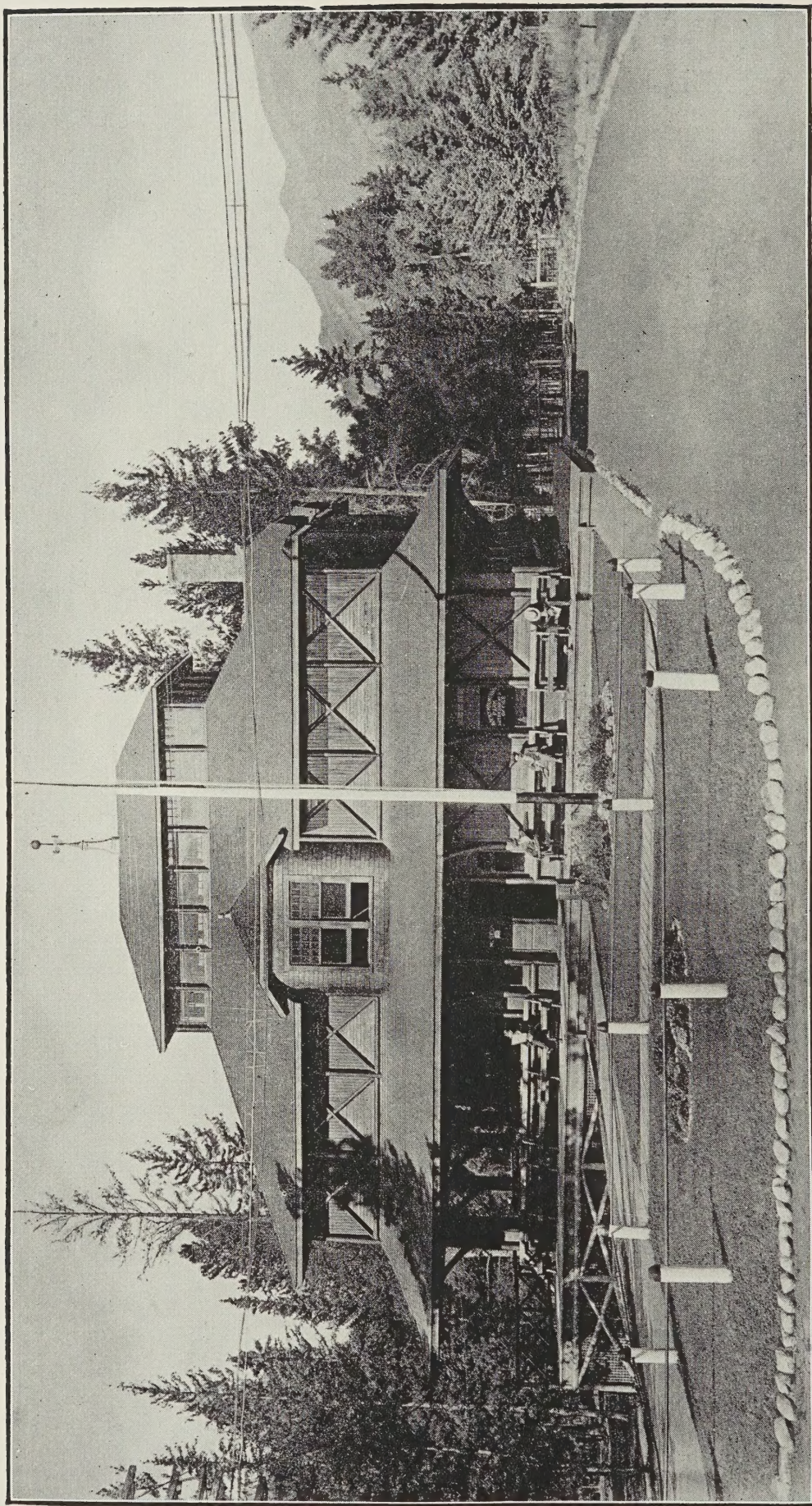
MUSEUM

ADMISSION FREE

OPEN 9-6 DAILY

OTTAWA
GOVERNMENT PRINTING BUREAU
1914





ROCKY MOUNTAINS PARK MUSEUM

Photograph by A. Knechtel

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DEPARTMENT OF THE INTERIOR
DOMINION PARKS BRANCH


HANDBOOK
OF THE
Rocky Mountains Park
Museum

By HARLAN I. SMITH

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PREFACE

THE Rocky Mountains Park Museum is maintained in the midst of the Rocky Mountains Park at Banff, Alberta, by the Parks Branch of the Department of the Interior of the Canadian Government.

The collections are of the natural history of the Rocky Mountains Park region, that is from the Rocky Mountains of Alberta and British Columbia generally. The visitor is not confused by specimens of more distant parts of the mountains or other parts of the world. But specimens such as are found in the Park are included even if taken far outside the Park itself.

The labels, maps and illustrations of the museum eventually should form the whole title, chapter, sub-chapter and paragraph headings, text, illustrations, maps and legends of a complete natural history book on the region, and conversely an ideal natural history book on the Rocky Mountains Park might be cut up and supply all the labels for the museum. The cover represents the museum's outside door label; the chapter heads, the large museum division labels; the sub-chapter heads, individual case or group labels; the text, framed labels to classes of objects; and the eight point matter, labels to individual specimens.

This handbook is intended to give something to the public now, and to serve as a basis for a future book which may be re-arranged, unified, made more complete, and more appropriate in style for the use of the average citizen. It is intended not only to present in book form and in order some of the labels of the museum as they are and it is to-day, but also some of the label copy yet to be printed; leaving for a possible future edition other labels and the label copy yet to be written. Some of the labels here given are already illustrated in the museum by specimens. The museum will be modelled after present and future handbooks by securing the necessary specimens and using the handbook matter for labels. Future editions may be issued to include a complete list of all the natural history objects and phenomena of the Rocky Mountains Park, so far as they have been learned.

From another standpoint this handbook presents a classified list of the chief or outstanding natural history objects and phenomena of the region with some popular explanatory matter.

The book thus serves as a reference handbook to the natural history of the whole region in and around the Rocky Mountains Park, as well as to the specimens in the museum, the living animals in the Zoo near the museum, in the large Paddock, about two miles away on the road to Bankhead, and running at large in the vicinity of Banff; all of these, like the museum, being maintained by the Dominion Government.

As the museum is maintained primarily for Canadian citizens as a whole, the scientific facts regarding natural history are presented and arranged not in the usual scientific order, but so as to bring to the fore some of the more noticeably Rocky Mountains and western matters, although in general the scientific order is preserved. Scientific names are interpreted into the language common to every day speech as far as possible.

The Museum is indebted to the Geological Survey, Ottawa, for maps and books; the Public Museum, Milwaukee, and the United States National Museum, Washington, for labels; the American Museum of Natural History, New York, for labels, maps and books; the Conservation Commission of Canada and the Central Experimental Farm, Ottawa, for books; Alexander G. Ruthven, A. Knechtel, S. J. Schofield, John Treadwell Nichols and L. D. Burling, for label copy; the United States Fish Commission for pictures of fish; to Allan Brooks, Okanagan Landing, B.C., for the chief assistance in making up the list of birds, which list is only tentative and is based upon the A. O. U. check list, Riley's list in the Canadian Alpine Club Journal of 1912, and Mr. Brooks' own observations in the region; and to N. B. Sanson, the curator and meteorological observer, for label copy and an inventory of the museum specimens. These courtesies are indicated by the initials of the donor in each case. In writing labels, I have found the literature listed in chapter 17 useful, especially *The American Natural History*, by Hornaday, and *American Animals* by Stone and Cram. The bird labels are quoted by permission from Charles K. Reed's *Bird Guides*, and very slightly modified.

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1. Geography of the Rocky Mountains Park

THE ROCKY MOUNTAINS PARK

THE Rocky Mountains Park is maintained by the Canadian Government under the supervision of the Parks Branch of the Department of the Interior. It is located in Alberta and consists of about one thousand square miles or 640,000 acres of the eastern slope of the Rocky Mountains, its eastern boundary being fifty miles west from the city of Calgary and its western limits the crest of the Rocky Mountains or the eastern boundary of British Columbia. In width it varies from ten to forty-five miles. In a north-west and south-east direction the length is about seventy miles. It includes the towns of Banff, Canmore, Exshaw and Bankhead. The chief tourist resorts are Banff with its hot springs and the Lake Louise Alpine district with its glacier near Laggan station. The Canadian Pacific Railroad and the Calgary-Vancouver automobile road cross it.

Within the Park are a variety of hotels ranging from two dollars per day up to the luxurious accommodation provided by the Canadian Pacific Railway.

The most important mountains are :—

As one enters the Park from the east :—

The Three Sisters, near Canmore, 9,704 feet in height.

Near Lake Minnewanka :—

Mount Aylmer, 10,333 feet.

Peechee, 9,585 feet.

Inglismaldie, 9,685 feet.

In the immediate vicinity of Banff :—

Rundle, 9,615 feet.

Cascade, 9,830 feet.

Sulphur, 8,030 feet.

Bourgeau Range, 9,510 feet.

Tunnel, 5,510 feet.

To the south of Banff, along the Divide :—

Mount Assiniboine, 11,860 feet.

West of Banff :—

Castle Mountain, 9,000 feet.

Near Lake Louise :—

Mount Lefroy, 11,290 feet.

Victoria, 11,400 feet.

Fairview, 9,001 feet.

Temple, 11,637 feet.

Hungabee, 11,305 feet.

Deltaform, 11,225 feet.

Bow River empties into the South Saskatchewan, whose waters finally reach Lake Winnipeg, Nelson River, and Hudson Bay. Lake Minnewanka, about eleven miles long, is located eight and a half miles from Banff. Hot Sulphur Springs are found in several places in the Park, the highest temperature being 114 degrees.

The Rocky Mountains Park Museum, the Zoo, immediately adjacent to it, and the Paddock, about two miles away on the road to Bankhead and Calgary, and on either side of the Canadian Pacific Railway, are among the chief points of interest in connection with the museum.

The native wild animals at large in the Park are protected. No hunter is allowed inside the Park with an unsealed gun. The magnificent forests are also protected from exploitation and fire.

THE ZOO

THE Zoo is immediately adjacent to the Museum. Here may be seen the following animals of the Rocky Mountains Park :—

Black Bears	Porcupines
Cinnamon Black Bear	Mountain Gopher
Grizzly Bears	Albino Gophers
Red Foxes	Marmots
Kit Foxes	Fox Squirrels
Timber Wolves	Black Squirrels
Coyotes	Canada Geese
Lynx	Hawks
American Panther	Golden Eagles
Badgers	Baldheaded Eagle
Pine Martens	Owls

The following animals from distant parts of the world may also be seen in the Zoo :—

Ringtail Monkey	Golden Pheasants
Rhesus Monkeys	Amherst Pheasants
Polar Bear	Reeves Pheasants
Raccoons	Common Pheasants
Orange Squirrel	Pea Fowls
Silver Pheasants	

THE PADDOCK

THE Paddock is about two miles from the museum on the road to Bankhead and Calgary and on either side of the Canadian Pacific Railway. Here may be seen the following animals of the Rocky Mountains Park :—

Rocky Mountain Sheep	Virginia Deer herd
Rocky Mountain Goats	Mule Deer
Buffalo herd	Moose
American Elk herd	

The following animals from distant parts of the world may also be seen in the Paddock:—

Persian Sheep	Angora Goats
Four-Horned Sheep	Yak

2. Mammals of the Rocky Mountains Park

MAMMALS

“**M**AMMAL” is the correct term for all that division of life that is generally recognized under the term “animal” in its most popular and vernacular meaning. They are so-called from the fact that all suckle their young by means of mammary glands. Mammals include man, monkeys, bats, insect eaters, like the ant eater, flesh eaters, like the cat, marsupials, like the kangaroo, rodents or gnawers, like the rat, edentata or toothless animals, like the armadillos, pachydermata, like the elephant, ruminants, who chew the cud like the deer, and cetacea, like the whale. They are those, of the warm blooded animals having back bones, that are put in the first class at the head of the animal kingdom because they have the most faculties, most specialized and complicated structure, varied movements, and highly developed intelligence. They all bring forth their young alive, some of which at birth have their eyes open and can run around at once: others are helpless. All have hair, though some, like the whale, lose it early. Most of them walk, a few, like the bat, can fly, and some, like the whales, live in the water. Man stands at the head of the class, the whale near the foot. The bones of all are alike in general, but modified according to the life of the animal. There are about ten thousand species or kinds of mammals, of which over forty are found in the Rocky Mountains Park.

The chief mammals of the Rocky Mountains Park are as follows :—

A. HOOFED ANIMALS:—

- I. Herbivora or Cattle
 - Rocky Mountain Sheep
 - Rocky Mountain Goat
 - American Buffalo
- II. Pronghorn
 - “Antelope ”
- III. Deer and Related Animals
 - American Elk or Wapiti
 - Virginia Deer
 - Mule Deer
 - Caribou
 - Moose

B. CARNIVORA OR MEAT EATERS

- I. Bears
 - Black Bear
 - Grizzly Bear
- II. Foxes and Wolves or Doglike Animals
 - Red Fox
 - Grey Wolf
 - Coyote
- III. Felines or Catlike Animals
 - Canada Lynx
 - American Panther
- IV. Weasels and their Relatives
 - Otter
 - Skunk
 - Badger
 - Long-tailed Weasel
 - Least Weasel
 - Mink
 - Fisher
 - Marten
 - Wolverine

C. RODENTS OR GNAWERS

- I. Rabbits and Hares
 - Varying Hare
 - Jack Rabbit
 - Little Chief Hare
- II. Porcupines
 - Western Porcupine
- III. Rats Mice and Voles
 - Muskrat
 - Bushy-tailed Wood Rat
 - White-footed Mouse
 - Jumping Mouse
 - Red-backed Vole
- IV. Beavers
 - Canadian Beaver
- V. Squirrels and Marmots
 - Red Squirrel
 - Northern Flying Squirrel
 - Northern Chipmunk
 - Golden Mantled Ground Squirrel
 - Richardson Ground Squirrel
 - Canadian Woodchuck
 - Yellow-footed Marmot
 - Hoary Marmot or Whistler
 - Columbia Ground Squirrel
 - Mountain Chipmunk

D. SHREWS

Marked Shrew
Dusky Shrew
Marsh Shrew

E. BATS

Brown Bats
Little Brown Bats
Silver-Haired Bat
Hoary Bat

The Rocky Mountain Goat and Rocky Mountain Sheep receive their names from the Rocky Mountains. The American Elk, Buffalo, Grizzly Bear, Mule Deer and "Antelope," are usually thought of as of the Rocky Mountains, Great Plains, or West, and with the Rattlesnake, Sage Brush, Cactus and Indian, are certainly closely identified with the West.

ROCKY MOUNTAIN SHEEP

ROCKY MOUNTAIN SHEEP, BIG HORN, *Ovis canadensis*,
Shaw

THE Rocky Mountain Sheep are the best and longest known of the true wild sheep of America. They are subdivided into several geographical races, clearly distinguishable but closely allied, and all may have descended from ancestral stock that crossed from Asia to Alaska. The Mountain Sheep is the chamois of the American West, a fine, strong, sturdy, active, bold, mountaineer with a keen eye. His tribe are the only wild animals having circling horns. Both rams and ewes have horns, but those of the ewes are short and little curved, like the horns of an immature ram. The mistaken belief in the existence of an "Ibex" in America is probably because of these nearly straight horns of the females or young males. Some of the Indians make beautifully carved spoons from these horns. These sheep are skilful, reckless climbers for heavy animals, travel easily where man and most other animals can scarcely follow, and jump well from a height, but they do not land on their horns as novices in the woods are often told.

They feed well all the year round, mostly on grasses on open slopes above timber line. They are seldom driven down to timbered slopes or foothills by blizzards as are elk and deer. In spring they venture down for food, but soon return.

The rams contest for the ewes, each gathering as large a harem as he can protect from his rivals, anywhere from three to about twelve. These families keep together until spring,

when the rams separate from the flock, and in May or June one or occasionally two lambs are born to each ewe, in the most dangerous and hidden places above timber line, where the eagle is about the only foe able to reach them when the mother is off guard. In spring and summer the larger bands consist of ewes and their lambs, with yearlings and young rams, the older rams keeping by themselves in smaller bands. The meat is savory to man and much sought by mountain lions.

They live in the most inspiring scenery in cloudland on crag and in canon among rugged badlands, plateaus and mountain peaks, and range usually above timber line in the Rocky Mountains from Arizona to Alberta, while their near relatives range from Mexico almost to the Arctic Ocean. Their more distant relatives among the true wild sheep are found in Central Asia and the Islands of Corsica and Sardinia.

Living specimens may be seen in the paddock and at large in the Park within three miles of Banff.

No. 18.—Ewe. From mountains, November, 1902, or February 16, 1903. Received 1904.

No. 19.—Lamb, male, 3 week old. From Wilcox Pass, 1906. Received January 3, 1906.

No. 20.—Lamb, female, 8 days old. From Wilcox Pass. Purchased in 1906.

No. 67.—Head of ram, 18 months old. From Rocky Mountains. Received 1911.

No. 68.—Head of ram, 18 months old. From Rocky Mountains.

No. 7.—Pair of Horncores on Skull. From Banff. Presented by C. A. Stewart, 1896.

ROCKY MOUNTAIN GOAT

ROCKY MOUNTAIN GOAT, WHITE GOAT, *Oreamnos montanus*, Ord.

OF all the wild goats, ibexes and other goat-like animals so numerous in North Africa, Europe and Asia, the several varieties of the Rocky Mountain Goat are the only representatives found in the New World. They are not true goats, being more closely related to the European chamois and the Asiatic goat-antelope. They look slow and clumsy, have a rheumatic gallop and their motions remind one of a bear, but while curious and somewhat stupid, they are the most skilful and brave alpine climbers of all the hoofed animals of the Americas. They seem to prefer a climbing path to the level, and can cross where Rocky Mountain Sheep, except when scared, dogs or men dare not follow, but are not absolutely sure-footed as is generally believed, and so sometimes have fatal accidents.

In shape they resemble a little buffalo, having high shoulders, thick body, stocky legs, and carrying the head low. Their faces are long, and with a short beard appear dreary. Both billies and nannies have short slender black horns. The coat is all yellowish white, which distinguishes them as the only all white ruminant or cud chewer in the world. It makes them inconspicuous against the snow, and they look like spots of snow against a dark rock background until they move, when it is no longer a protection. It is of a fine dense wool next the skin, with a long thatch of hair growing through it, and is short in summer but long and silky in winter. The flesh is so dry and musky that white men dislike it. The Rocky Mountain Goat lives mostly on moss and is fond of sorrel. Very few have as yet been kept or bred in captivity.

A sagacious old nanny usually leads a band of goats. They watch for danger from below and retreat upward, but seem never to suspect that a hunter may approach from above them.

They live on grassy places above timber line, usually above the home of the Rocky Mountain Sheep, are fond of resting on shale slopes and travel over ice covered slopes. They still range in the highest peaks of the Rocky Mountains and the Coast Range from Alaska to Idaho.

Living specimens may be seen in the paddock and at large in the Park.

No. 16.—Full grown Ram. From the Rocky Mountains. 1910.

No. 17.—Head of full grown Ewe. Taken on February 20, 1903. Purchased in 1904.

No. 70.—Head of Ram. 1900.

No. 5.—Skull. From Banff, July, 1906. Collected by N. B. Sanson, July, 1906.

AMERICAN BUFFALO

AMERICAN BUFFALO, BISON, *Bison bison*, Linnæus.

THE American Buffalo, as he is popularly known, should be called a Bison in strict parlance. He is the finest quadruped and most noted hoofed animal in all the New World, but is not one of the true buffalos, as he has a hump, while they have none and are only found in Asia and Africa. He is of great size, weighs up to 2,100, has a large head with a beard, immense shoulders with long brown hair terminating in magnificent locks, small hindquarters with short hair and a tassled tail. He sheds his winter coat in March and looks disreputable until it is fully shed. He carries his head low, which makes his hump

appear higher, and has short, curved, black horns which turn upward and out, those of the bulls being heaviest. He faces storms and does not hesitate to swim large rivers. The powerful bulls often bellow and paw up the earth. He is stupid, slow of comprehension, stolid, and indifferent to all he does not understand.

His typical feeding ground was usually covered with low buffalo grass (*Bouteloua*), and tufts of tall "bunch grass," or broom sage (*Andropogon*), interspersed with which were sage brush (*Artemisia*), and a species of prickly-pear (*Opuntia*). Buffalo paths resulted where they went in single file as when searching for water. He migrated north in the spring and south in autumn. He wallowed in mud to rid and protect himself from flies, and this made saucer shaped buffalo wallows which still remain in places where he is extinct.

He is polygamous like other cattle. The calves are born in May, and are of a brick red color. Timber wolves and coyotes skulked among the herds after the calves, dodging the charges of the mothers. While the calves are small, the old bulls associate by themselves.

The buffalo were valuable as the cattle of the Indians, nearly as tame as the wildest domestic cattle. The Indians ate the meat which tastes like beef, made houses and clothes from the skin, tools from the bones and horns, and used the dung, which also was extensively used by the pioneers, for fuel. The white man saw the first one in Montezuma's menagerie in Mexico in 1521, and the first one not in captivity in Texas in 1530.

Buffalo were more numerous than any other large mammal of historic times, and once ranged over one to two-thirds of North America, from Pennsylvania to Mexico, and to Great Slave Lake and the land of the musk ox, about 2,000 miles east and west by over 3,000 north and south. Centering in his natural home, the billowy great plains, he also lived on the plains of northern Mexico, the Great American Desert, up into the Rocky Mountains to an elevation of 11,000 feet and even nearly to tide water east of the Appalachian Mountains. At one time a man could drive for twenty-five miles through an unbroken herd. They even obstructed steamboats, and derailed railroad trains. He was hunted for his hide and tongue until almost completely exterminated in his natural range. Not more than 1,000 remained, these being chiefly in Yellowstone National Park and the Great Slave Lake region, in which latter place there are about 600 of a variety known as the Wood Buffalo. In 1870 they ranged from Texas to Great Slave Lake. In 1890 they were to be found only in parks and the Great Slave Lake region. There are now slightly over 1,500 in captivity, which are increasing slowly, but they deteriorate in small

inclosures. Considering these immense herds, and how few there are left, he may be considered an animal of the past. A relative was found in Europe, but is now only in a few Russian forests.

Living specimens may be seen in the paddock and there is a herd of over a thousand in Buffalo Park, at Wainwright, Saskatchewan.

No. 23.—Cow. From Montana. Received in 1907.

No. 24.—Head of large animal. Received in 1910.

No. 25.—Head of large animal.

No. 26.—Head.

No. 27.—Young Bull, 5 or 6 months old. From Banff, Alberta. Received in 1903.

No. 28.—Very young calf. From Banff. Received in 1903.

No. 6.—Skull. From Banff, 1897. Collected by N. B. Sanson, 1897.

No. 0.—Inner part of Skull. From Alberta. Presented by R. Robertson, July, 1906.

“ ANTELOPE ”

“ANTELOPE”, PRONG-HORN, PRONG-BUCK, *Antilocapra americana*, Ord.

THE “Antelope” are found only in North America, where they are one of the most characteristic animals. They stand between cattle and deer and are the only species of the family to which they belong. They are known from the antelopes of the old world, which are cattle, by the facts that the horn-sheaths are shed every year, which is peculiar to this species, and all the hair on the rump, surrounding a musk gland, can be erected, also by the fact that the horns have a prong. From this prong the name, prong-horn, is derived. The sunlight reflects on the rump hair, and when it is raised and lowered a musky odor is given out. The Prong-Horn has a short mane. Only the bucks have horns. On the other hand, deer shed the entire antler and have no horn-sheath.

“Antelope” are trustful, affectionate and fond of being noticed when in captivity. They are very swift runners, and capable of jumping far, but not high. They are rovers after water, food and shelter, gathering in large herds in autumn and in winter going to sheltered places where the snow is not deep. They do not try to hide, but rely on their keen hearing and sense of smell, and being the swiftest runners in North America, depend on their fleetness for safety. They defend themselves from such enemies as wolves by striking, and it is said they can kill a rattlesnake before it can strike. They are so curious that strange movements, such as waving flags, attract them, which often leads to their death.

They eat only grasses and other herbage, but cannot live

on the rich green grass of the east. In the spring the does separate from the others and have their young, usually two kids, kept hidden and watched for two weeks until they are able to follow their mothers. In summer the old bucks live away from their families.

"Antelope" live on open plains and foothills, but shun woods and lofty mountains. They ranged from Central Mexico to Alberta and in the Coast and Cascade Ranges. One near relative ranges in Mexico and another in Lower California. Formerly numerous, all are now nearly exterminated.

No. 15.—Head of Buck. Purchased 1907.

AMERICAN ELK

AMERICAN ELK, WAPITI, *Cervus canadensis*, Erxleben.

THE American Elk is called Wapiti, especially by Europeans, who use the name Elk for a moose-like animal. He is one of the monarchs of the west, as tall and as majestic as an Arabian steed. His mane is luxuriant, his legs and hoofs small and shapely. He makes his home on solid ground, is fond of bathing in the warm summer months, and feeds by both grazing and browsing. The elk is easily bred in confinement.

Though the finest specimens were found on the crest of the continent, he originally covered nearly the same country as the American buffalo, or about 75% of the States of the American Union and part of Canada. He ranged from New York to Victoria. Twenty-five years ago he still lived on the western part of the plains, but never north of the Saskatchewan. In the hot weather the elk may ascend to an altitude of over ten thousand feet on the Rocky Mountains. The elk has been killed off from all but 5% of his former range. Today there are probably less than 25,000 and they are nearly all protected in parks.

Living specimens may be seen in the paddock.

No. 5.—Head of Buck. The antlers have nineteen points and a spread length of sixty-three inches. From Morden, Manitoba, November, 1901. Purchased in 1904.

No. 6.—Head of Doe. From Saskatchewan River, Foothills, Alberta, 1899. Purchased in 1904.

No. 7.—Head of young Buck, eighteen months old. Prongs thirty-one and a half inches, other twenty-nine and a half inches. This is a record growth. From Pembina Mountain, Manitoba, fall of 1898. Purchased in 1904.

No. 8.—Elk Fawn. Purchased in 1901.

No. 9.—Elk. Killed fighting another buck in paddock, Banff, September 17, 1907. Purchased in 1908.

No. 8.—Two antlers. From Banff, Alberta. Presented by G. A. Stewart.

VIRGINIA DEER

NORTHERN VIRGINIA DEER, NORTHERN WHITE-TAILED DEER, FLAG TAILED DEER, RED DEER,
Odocoileus virginianus borealis, Miller.

THIS variety of the common deer which is the best known hoofed animal except the buffalo because most widely and longest known, was the first deer met by the settlers of America, and will be the last of the large hoofed animals of North America to become extinct. They are named white-tailed deer because the long bushy tail is snow white below and on each edge. They carry it up when running in fright, so that it is conspicuous as it swings from side to side. In Canada they are called red deer, because of their reddish summer coat, but they are not like the red deer of Europe. They differ from all other deer in that the antlers bend forward suddenly and each have three tines, and in that the tail is long and pointed. They are distinguished from the southern variety by greater size, more massive horns, and a greater distinction between their red and blue coats. They stand the severest winter weather well.

Deer are largely forest animals, and are seldom seen in deforested areas, but do live in willow brush, quaking asp and cottonwood groves on the Great Plains. In localities where they are frequently disturbed they are active at night or in the evening or early morning, and usually lie concealed later in the day, but where unmolested they may feed all the morning. They hide, crouch, carry the head low, and cling to timber. Though ordinarily wary, timorous, and unlike the mule deer in that they skulk, yet they return to a place they flee from rather than abandon it as do many other animals, and consequently they increase rapidly in suitable localities when protected. On the whole they are happy and care free. Their grey colour makes them inconspicuous in brush and so protects them. They are fleet, remarkable jumpers, and graceful, especially when young. Only the bucks have antlers, the first year a single spike with additional prongs later. These are usually shed every year in January. In May the new antlers show, and they are covered with soft hairy skin called velvet, which supplies them with blood until mature in August, when it is rubbed off against trees.

They eat plant food only. It varies with locality and season, and includes many kinds of leaves and twigs, berries, fruits, acorns, beechnuts, buds of trees and bushes, herbs, grasses, ferns, moss and lichens. During the summer and early fall they frequent the vicinity of water to get lilly pads

and other water and marsh plants. They are good swimmers, and go in the water both for food and safety when pursued. In the winter they tramp down deep snow to get food and so make path laborinths called "yards."

They are sociable, and one buck has from three to five does. The rutting season is in November, when the stags are less cautious, fight one another, sometimes to the death, even attack men, and wildly track the does. The fawns are born in May in dense thickets, usually two, occasionally one, three or even four. The fawns stay where born a fortnight or more, and the doe returns morning, evening and night to them. The fawn's spotted coat is shed in September. When two years old they have their first young. Panthers, wolves, lynxes and foxes formerly caught the fawns, but now only foxes and wolves are numerous enough to do much of this damage.

There are different varieties of this deer, according to the region. There are about 100,000 in Maine, and over 15,000 are killed there each year. They were once abundant over the entire country in southern Canada and in nearly every state of the United States, except the extreme south-west. Related forms with white tails are found in Florida, Texas and Washington. They range over the Canadian or lower Boreal and Transition zones of eastern North America.

Living specimens may be seen in the paddock.

COLUMBIAN BLACKTAIL DEER

No. 10.—Head of Buck. From Vancouver Island.

No. 11.—Head of Doe. From Vancouver Island.

No. 12.—Head of young Buck. From Vancouver Island.

No. 13.—Head of young Doe. From Vancouver Island.

MULE DEER

MULE DEER, ROCKY MOUNTAIN BLACK TAIL,
JUMPING DEER, *Odocoileus hemionus*, Rafinesque.

THE Mule Deer or Rocky Mountain Black Tail, not to be confused with the Columbia Black Tailed Deer, derives its name from his large mule-like ears, but is not a large heavy animal like the mule. His short tail is white with only a black tip, and the base is naked below. He is also known as the Jumping Deer because of his distinctive gait. When going fast he does not lope or travel like the Virginia Deer, but bucks or makes very long stiff-legged jumps.

He is larger, heavier, coarser and darker than the Virginia deer, is handsome and the largest of what are usually called deer, but smaller than elk or moose. The general colour is dull yellowish with white underneath in summer, grey in the fall and steel grey in winter, matching his winter surroundings. The antlers are very different from those of the Virginia Deer. They fork equally, and each prong again branches into two. He is only surpassed in stateliness by the elk of all the round antlered animals. His scent is keen; his funnel-like ears aid his exceptional hearing, but his eyesight is considered rather weak. He is crafty, will try to stay hidden until molested, will not approach out of curiosity, and is a bold traveller.

He eats twigs, leaves, even spicy sage, and good grass where it abounds. Two or three fawns are reared at a time. He is an unsurpassed, charming, proud spirited, game animal, making the finest of meat and the best of buckskin.

He is found in the most charming and picturesque, as well as in the rough, badlands country, and also on plateaus and in ravines throughout the Rocky Mountains as high as ten thousand feet ranging eastward to Manitoba and Texas.

Living specimens may be seen in the paddock and at large in the Park, even in the streets of Banff.

No. 14.—Head of Buck. Purchased in 1907.

No. 69.—Head of Buck. From Banff, Alberta. Purchased in 1907.

MOOSE

MOOSE, *Alces americanus*, Jardine.

THIS animal is called the elk in Europe and is the largest deer there ever was, surpassing even the extinct Irish elk, and appearing like a lonely monster lingering from the past. The legs are often four feet long and the shoulders seven feet high. The bulls have antlers spreading over six feet, flattened sometimes to a width of nearly two feet, with a fringe at the outer edges of sometimes as many as thirty-four points, several of which extend forward.

He is thatched with coarse smoky purplish grey hair, some of it six inches long, and some on the shoulders forms a characteristic hump. The hair was extensively used, like porcupine quills, by the Indians for embroidering. A hair-covered skin "bell," perhaps a foot long, hangs at the neck of many of the bulls and a few of the cows. The ears are large, the tail short, and the overhanging, broad, square-ended, prehensile nose is characteristic and useful in browsing.

He is confiding, steady, affectionate, can be trained to harness, and though nervous like all deer, has the most common sense of all. Moose meat is sold in the market for food.

He eats by browsing, and not by grazing like most deer, riding down bushes and small trees to get at the tops. He is fond of the bark, twigs and leaves of the spruce, hemlock, maple, alder, willow, aspen, cottonwood, and birch. He has to kneel to reach the mosses and lichens easily. He needs vigorous exercise to digest his food and dies if fed only green grass, hay, grain, and vegetables. When the snow is deep, moose assemble, and treading down the snow, form a "moose yard." He is clumsily fleet of foot, due to the stride of his amble, although he does not jump or gallop. He has great endurance, and can penetrate such brush as turns most men back.

The calves are born in May, with red hair. They stay with the mothers until about three years old, do not attain full size until perhaps fifteen, and live to be very old. The bulls are brave and have a louder whistle than the cows.

The Moose lives in evergreen forests, never in treeless plains, and is fond of the quiet water of ponds and lakes. He is a good swimmer and loves to wade. He still ranges in the north throughout the Rocky Mountains from Alaska to Wyoming and to New Brunswick.

Living specimens may be seen in the paddock.

No. 1.—Head of Buck. From Saskatchewan River, Alberta. Purchased in 1907.

CARIBOU

WOODLAND CARIBOU, SWAMP CARIBOU, *Rangifer caribou*, Linn.

THERE are several species of this deer-like animal. He is the North American reindeer, slightly different from his domesticated European relative. Unlike the elk, moose and other deer, the cows as well as the bulls have antlers. He belongs to the flat antlered deer group, though the antlers are partly round and partly palmated. They are usually long and branching with more than thirty points; one brow prong being turned vertically. They help to disguise or hide him as they resemble dead and weather beaten tree branches.

He is of a bluish brown and grey colour, matching the colour of the marshes, but in October the new coat is seal brown and in winter, being fog color, it more nearly matches the snow. His long hair with wool forms a raincoat as warm as that of any hoofed animal except the musk ox.

His unusually flat deeply cloven hoofs assist this born traveler, as snowshoes, in crossing snow and muskeg where other animals sink. His long stride enables him to trot far with ease. Even a long gallop does not seem to tire him. Caribou assemble in immense herds, probably even larger than those the American buffalo formed a century ago. Led by wise old bulls, they migrate long distances, grunting as they go and are then usually very tame. He is very inquisitive. He has learned to leap over fallen timber, but tries to avoid it, and does not jump instinctively as do the true deer, nor has he keen eyesight. He eats sedges, moss and lichens. The families are brought up in solitude and are assembled later.

He ranges over the wooded northern part of North America, seeking shelter in winter among the spruces; wanders over the treeless barrens; and lives even in Greenland and further north than any other hoofed animal except the musk ox.

- No. 2.—Head of Buck. The antlers have eighteen points, length thirty-six and a half inches, longest spread thirty-one inches. From Brazeau, Alberta, Fall of 1902. Purchased in 1907.
- No. 3.—Head of young Buck, eighteen months old, with his first antler prongs. From Brazeau, Alberta, Fall of 1902. Purchased in 1907.
- No. 4.—Head of Doe, eighteen months old. From Brazeau, Alberta, Fall of 1902. Purchased in 1907.

BLACK BEAR

BLACK BEAR, *Ursus americanus*, Pallas.

THE black bear is the best known bear in North America. He has a smooth coat of black hair, of nearly uniform length. Cinnamon bears, found west of the Rocky Mountains, are brown individuals of this same species—in fact both brown and black bears are found in the same litter. He carries his head low, and is a good tree climber. He is usually timid, is exceedingly afraid of man, and when aware of being seen runs away. Though usually inoffensive, when cornered or wounded, or in case of a mother protecting her cubs, a black bear is a dangerous and brave, though a bawling, roaring and coughing fighter. His curiosity and sense of humour sometimes cause him to watch and study men, if he thinks he is not seen, or, when in captivity, to get more fun than most animals watching people in front of his cage, or by playing with an old hat or bottle. His sharp senses of hearing and smell, aided slightly by his sight, enable him to know of the approach of men, and other animals. In hot weather he wallows in mud like a pig.

He eats a great variety of things, preferring a vegetable diet, and when they are in season, he regales himself on berries, blueberries being his favorite, wild grapes, and other fruits, beechnuts, acorns, mushrooms, the ears and sweet stalks of

corn, and the roots and stalks of other succulent plants. He eats also grasshoppers, ants, crickets and other insects, snakes, fish, mice and other mammals, and is fond of robbing pig pens. He eats anything eatable, even carrion, although it is said he eats meat only when he has no other food. His fondness for sweets makes a bees', or even a yellow jacket's, nest irresistible in spite of stings.

He is not sociable, but about June several males may contend for a female; the cub may stay with its mother for over a year; or much food may bring several to one place. They are well tempered and playful, especially the cubs, which delight to run, jump, wrestle, box, play hide and seek, and to worry each other or the mother.

Early in winter bears find or dig a den among rocks or in a cliff, among tree roots, under a log, or in a hollow tree, where leaves, sticks, moss, etc., are brought for a bed. They allow the snow to close up this retreat, and here they hibernate more or less until thawed out in spring, when they are thin and weak; the soles of their feet crack and peel off, making them tender, and they eat grass to restore their health. Males are said not to so "den up" when food is plenty, but the females do, and bear their cubs in January.

There are usually two to four cubs, but sometimes only one. They are very slightly developed, are scarcely nine inches long, each weighs less than a pound, and is but partially covered with short, velvety hair. Their eyes open in about forty days, and the mother keeps them warm for about eight weeks. They leave the nest when about ten weeks old, and reach maturity at four years.

They live in nearly all the woodlands and mountains of North America, from Costa Rica to Alaska and Nova Scotia to Vancouver Island, except possibly Louisiana and Florida, in which two states, however, there are other closely related black bears.

Living specimens may be seen in the Zoo and at large in the Park within two miles of Banff.

No. 40.—Black Bear. Six months old. From Alberta. Spring of 1903.
Purchased in 1904.

GRIZZLY BEAR

GRIZZLY BEAR, *Ursus horribilis*, Ord.

THE grizzly bear is one of the largest and fiercest bears in the world, often measuring over six feet in length. His hind foot is longer than that of the black bear. He usually has shaggy fur of a brownish yellow colour—in fact it is truly grizzly, but sometimes is mainly black.

He lives on a variety of things, among them berries, skunk cabbage, and other fruits and green things, besides insects, mice, moose, elk, deer and other animals. The grizzly bear can kill and carry any living animal found in his country; but the mountain lion may give him trouble. When the bison was numerous these bears hunted even that animal. Now he hunts the rancher's stock when smaller animals fail to satisfy him. He seldom attacks man except when attacked, or when a mother fears a cub is in danger. The rifle has made his ability to hide from man a greater protection to the grizzly than his splendid strength.

The cubs being light and spry sometimes climb trees. They are playful and clownish.

This bear ranges in the Rocky Mountains from Yukon to Utah.

Living specimens may be seen in the Zoo.

CATS, FOXES AND WOLVES

THE native cats of North America belong to the same family as the Lion, Tiger, Leopard and Domestic Tabby. All of them are powerful carnivora, or meat eaters. The sabre tooth tiger, with canine teeth half a foot in length, is represented by fossil remains in the great West, and was much more powerful than any of the living great cats.

The foxes and wolves with the dogs make up a family that resembles the cat tribe in that its members walk on their toes and have only four toes on the hind feet, but the claws cannot be sheated and are shorter and duller. Wolves are the meanest, most treacherous and cruel animals to an inferior in this country. They eat their own wounded or dead. One has been known to kill and eat its own mate, and many to bite the paw of a fellow prisoner let rest too near the bars between their cages. They will abandon their own pups when their enemy is their equal or superior.

RED FOX

RED FOX, CROSS FOX, SILVER FOX, BLACK FOX,
Vulpes fulvus, Decmarest.

THE red fox deserves his good reputation for cunning shrewdness. His hearing is acute, and is used for pursuit as much as for safety, and is more dependable than his eyesight. He is as audacious as he is cautious. The fox is characterized by speed in learning from experience, and in adjusting himself

to new conditions. He even makes friends with his hunter's dogs, and gets them to play with him. He will back track, lose his trail by walking in running water or across ice too thin to support his pursuer. He shuns his home when pursued, avoids traps, pretends not to see the hunter when discovered, and if possible increases his speed only when he has gotten behind a tree or other screen that he can keep between him and his pursuer. He is handsome; his colour varies, but red prevailing has given him his name; he is pale in the desert and bright in the forest and Arctic. The Black Fox is a phase of the Red Fox, and a dark cross on some intermediate forms gives the name to the Cross Fox phase. He hates to wet his feet, and so uses the farmer's bridges more than the farmer does himself, also his roads and trails. He sometimes screeches long and wild like a panther, and has a husky, petty, disagreeable, menacing bark. He hunts at all hours, though he prefers sunrise and twilight.

He eats small animals, such as woodchucks, field mice, grouse, small birds, frogs and eggs. He likes to rob the hen-roost, but is too cunning to go to the same roost twice, and prefers to take chickens in the fields away from the farm house, and near a screen for retreat. His eating of woodchucks and field mice benefits the farmer, who, having rid the region of wolves and panthers, has given the fox an easy time compared with his former existence, even if the farmer does shoot him on sight. A single skin of a black fox has sold for over \$2,500.00, and fine skins commonly sell for \$1,000.00. He is easily caught in wild regions, but where his tribe has had a chance to study man he is not so easily to be taken unawares. He has less awe of man than most animals, and will follow the hunter to keep from being followed.

His home is in a burrow, and he ranges in northern North America as far south as Georgia, to as far north as the Arctic sea, and is too cunning to be exterminated.

Living specimens may be seen in the Zoo.

No. 34.—Cross Fox. From Paddock, Banff. Winter of 1901. Purchased in 1903.

KIT FOX

KIT FOX, SWIFT FOX, *Vulpes velox*, Say.

THE Kit Fox is the smallest and daintiest of all Canadian foxes, being only five-eighths as large as the Red Fox. He is of a yellowish silver grey colour, with dark on the back and white on the under parts, and there is a black patch on each

side of the muzzle. His tail is bushy. He is not a swift runner, and is becoming scarce, partly because he will eat meat that has been poisoned and put out to kill wolves.

He ranges on the plains from Nebraska to the Rocky Mountains and as far north as the plains extend.

Living specimens may be seen in the Zoo.

GREY WOLF

GREY WOLF, TIMBER WOLF, *Canis occidentalis*, Richardson.

THE timber wolf is about the same terrible animal as is described in European folk-lore, being nearly five feet long. He is generally grey with a nearly black back, and blotches on shoulders and hips, but varies greatly. In the Arctic he usually tends to be white and in Florida black. He carries his tail above the horizontal. He is cunning and merciless, has great endurance against fatigue and cold, being found to within 10 degrees of the North Pole.

Wolves run down their prey rather than stalk it, and so usually hunt in packs and relays except when rearing their young. They fed upon the sick, wounded or unprotected calves of the buffalo, and still feed on deer, "antelopes," and smaller game, killing even foxes that are swift but less enduring. They prey upon domestic animals, such as colts, calves and dogs, with no pangs of conscience, but are said to even adopt a dog that will desert his master. Though the wolf fears the rifle, the trap and poison, yet he is a bad customer. He has his home in secluded rocks or burrows that he digs himself, and here the puppies, perhaps as many as nine, are born in May, the mother keeping house, the father bringing in the food. The howl is not a bark, but is long and deep, very unlike that of his little cousin, the coyote.

Timber wolves wandered in great packs nearly all over North America, wherever there was food, but their depredations on stock and the fear of them led to the placing of bounties on their lives, and they are consequently now rare, except in wild and sparsely settled parts of the country, such as deserts, badlands and the Hudson Bay region, though their European cousins are still a pest in Germany, Russia and even France. They were perhaps most numerous on the open prairies, next in the tamarack swamps, and scarcest in the mountainous regions. They may be increasing in certain parts of the Rocky Mountains, and elsewhere.

Living specimens may be seen in the Zoo.

COYOTE

COYOTE, PRAIRIE WOLF, *Canis latrans*, Say.

THE Coyote is small, greedy, slinking, shy, cunning, active and swift like foxes and other wolves and never was dangerous to man, but being smaller is not as brave as the timber wolf. He apparently enjoys life and adventures yet looks so depressed as to seem clownish. He seems to know when a man is armed or intends him harm. He figures largely in North American Indian mythology as the clown and transformer or creator of the world, so that many Indians revere and befriend him. He may be the ancestor of their dogs. He is of a grizzly, yellowish, grey-pepper-and-salt, or even black colour, whitish underneath and tail black tipped and pointed downward as befits a coward.

He hunts running in howling packs at night, and eats "antelope," deer, rabbits, ground squirrels, mice, grouse, sage hens and other birds. In a pinch he may eat plant food, such as juniper berries, rose apples, and cactus fruit. A pack round up "antelope" and deer, and two coyotes often hunt rabbits in relays. It is said they drive animals near to their dens before killing, so as not to have to carry the carcass far. The coyote follows the hunter to get whatever may be left, and even hangs around ranches for scraps, pigs, lambs, sheep or poultry. Then he becomes bold. Some men believe that such wolves were tolerated by primitive men until in time they became domesticated and gave rise to the domestic dog. Only the wolverine is more skilful in avoiding a trap, but the coyote in his greed may eat poisoned meat. The very name "latrans" means barking, and two coyotes often make so much noise that the average citizen may be excused if he believes forty are barking, howling and yelping with unholy glee and making the long night echo as if with the wail of despair of the hopeless, associated in the mind of the traveller with vast, free, open expanses of fragrant sage brush. He is useful to rid a fruit region of rabbits if poultry is protected or absent. Lap robes, coats and gloves are made of his fur, which sells from ten cents to four dollars a skin, according to quality.

His home is among stones or in burrows. The family may include half a dozen puppies. He ranges from the Rocky Mountains to the northern Mississippi, with related species south to Mexico and west to the Pacific, but is now rare east of the plains.

Living specimens may be seen in the Zoo and at large in the Park within one mile of Banff.

No. 32.—Male. From Alberta, 1904. Received August 13, 1904.

No. 33.—Female. From Banff. Received from the Zoo, 1904.

CANADA LYNX

CANADA LYNX, LOUP CERVIER, *Lynx canadensis*, Kerr.

THE Canada Lynx and the Wild Cat are the two cats of the Lynx genus found in North America; another species lives in northern Europe and Asia. The lynx was a mystery to the ancients and was believed by them to be able to see through any object. The species found in the south deteriorate in size, which suggests the north as the true home of the Lynx.

The Canada Lynx is a big-eyed, flat-faced, short-bodied, bob-tailed, snarling savage, with long side whiskers, who has larger feet, shorter tail, and fur much longer and looser than the wild cat. He stands one and a half feet high, is not over three feet long, and sometimes weighs over twenty pounds, has heavy fur of light grey or pepper-and-salt colour, mottled with tawny buff and brown with white on the under side and tip of the tail. There are tufts of long black hair on the ear tips. The colour makes him unnoticed against almost any natural background. He runs poorly, traveling by galloping or by leaps and bounds, landing on his big paws which serve him as snow-shoes, and he swims well. His muscular legs and paws are enormous in comparison with his slender body. He climbs trees easily, and from an overhanging position pounces down on prey, but is a coward and never attacks people.

He eats hares, prairie dogs, grouse, squirrels, fish, birds eggs and scraps of food left by other animals, but often suffers from hunger in the winter.

The summer home is in thickets where usually two kittens are reared. The Canada Lynx lives in forests, mountains, canyons, plains and deserts, and ranges in northern North America south on the mountains as far as Pennsylvania and north as far as southern Yukon.

Living Canada Lynx may be seen in the Zoo.

No. 31.—Canada Lynx. Purchased in 1903.

No. 2.—Skull. From Banff, Alberta. Collected by N. B. Sanson, June 26, 1906.

AMERICAN PANTHER

AMERICAN PANTHER, COUGAR- MOUNTAIN LION,
PUMA, PAINTER, CALIFORNIA LION, *Felis concolor*,
Linn.

THE panther is a big skulking coward except in hair-raising literature, and probably because he has learned that every wild animal that shows himself where determined Indians and frontiersmen dwell, has been wounded or killed. He trails men, when he can do so unseen, out of curiosity, yet is less

to be feared than a bad dog. In wild regions he prowls by day as well as at night. He is usually silent, but sometimes screams. In a fair fight, however, he is not always a coward, and he destroys horses, cattle, sheep, pigs, and dogs. He is easily killed with the aid of dogs, though rarely seen and seldom taken otherwise. He is a beautiful, graceful animal, nearly uniformly brownish drab all over the body, but the kittens are spotted. Sometimes he weighs over 200 pounds, and reaches a length of eight feet. He is the best climber of the big cats.

He eats only freshly killed animals, usually the deer, but also devours mountain sheep and goats, and when hungry will take even elk and moose. He seldom catches "antelope," but eats porcupines and rabbits.

He makes his home in hollow trees, and sometimes in brush or holes in rocks. There are from two to five kittens in a family. He ranges from the Arctic to the tropics, and lives in forests, mountains and plains, in the Rocky Mountains westward, and south throughout South America.

Living specimens may be seen in the Zoo.

No. 30.—Head of American Panther. From Alberta. Received from the Zoo. Shot because of mortification of leg gnawed through bars by timber wolf in next cage.

PIKA

PIKA.

THE Pika is a little gray animal often seen running about among the gray broken stones under which it disappears like a flash when disturbed. It has a penetrating, nasal bleat, or queep, a strange sound, penetrating, complaining, mysterious, intangible, haunting steep rocky mountain slides, which gives it a publicity only exceeded by that of the whistling marmot, which one usually hears for some time before locating it. As big as a squirrel, with little beady eyes like a rat, no tail at all, and big round ears, a *tout ensemble* which looks strangely like and strangely unlike a rabbit, make it pre-eminently interesting among the small wild animals of the mountains. Though motionless and calling, it is very difficult to find in a background of similarly coloured rock.

PORCUPINE

CANADA PORCUPINE, *Erethizon dorsatus*, Linnæus.

THE Porcupine, generally seen as a dark blotch sitting motionless on a branch of a tree, is noted for his spines or quills. The quills are modified hairs and have small barbs. Some of them are four inches long. They are white but tipped with yellow, and are scattered, pointing backward among

the hair, which is longer, some of it being six inches long. The quills can be erected by contracting the skin. His legs are short; and he has only four toes on the front feet. He is unprepossessingly dark brown to nearly black in colour, and neither beautiful of form nor graceful, being slow and dull. Even his eyes are small, dull and thoughtless.

He is a rodent or gnawer. He eats the green leaves and bark of trees on the ground, or in the tree tops, and is fond of stuffing himself with pine or cottonwood bark, or hemlock twigs, often stripping a whole tree at a sitting, eating enough to last him over a cold snap. He prowls around cabins and eats any salty or greasy things that he finds, such as articles made of leather. Few people other than Indians eat his flesh. He is fond of sunshine in cold weather, and is unafraid of daylight, perhaps because he is so well protected by his spines, and also because most of his enemies, like the fisher, prowl at night. His barbed quills pull out, but are not shot or thrown at an enemy. The porcupine merely erects his quills when disturbed, and sometimes defends himself by striking quickly sidewise with his tail. The quills stick in the face or feet of panthers, lynxes, dogs and other animals, which are so foolish as to molest him. The barbs on the quills cause them to travel in, filling the mouths of some animals so that they can hardly eat and these are occasionally found in a starving condition, sometimes long after they have killed the porcupine. Dogs that have teased a porcupine often present a grotesque appearance with their grey mustaches made up of quills.

The porcupine's home is in the rocks or a hollow log where he can sleep with his back to the door, his quills like the bayonets of a defending army. He seeks solace from cold and hunger by sleeping. There are usually two young in each litter. The porcupine is confined to the country north of the southern boundary of the Canadian faunal zone, and extends as far east as Nova Scotia.

Living specimens may be seen in the Zoo and in the Park.

BEAVER

CANADIAN BEAVER, *Castor canadensis*, Kuhl.

THE Beaver, the symbolic animal of the Dominion of Canada, is noted for his peaceful disposition. He is our largest rodent or gnawing animal, and the mammals' foremost and most industrious mechanical engineer. He is noted as a builder of dams. Though heavily built, he is the aquatic animal of the squirrel tribe, and is adapted to that life by his webbed hind feet and characteristic broad, flat, hairless, scaley

tail, his propeller and the Indian epicures tidbit. He sleeps by day and works in the night.

The second toe of the hind foot has two claws, and the beaver in having two separate bones in the lower leg is like the marmots and squirrels, rather than the mouse-like animals, which have the two bones fused.

The beaver fells trees to get the food he prizes, aspen, cottonwood, poplar, willow, elm, box elder and birch, but never eats oak, ash or hickory. To cut a tree he stands on his hind legs, and gnaws with his chisel-like front teeth two rings around the trunk; then he takes out the place between and so continues until the tree falls. He often cuts trees a foot in diameter. He is more apt to stand on the side of the tree nearest his water refuge and trees near streams often lean towards the water, so that it is said that he fells the trees in the direction of the pond where he wishes them.

He builds large dams of sticks, grass and mud, to make ponds in which wood for winter food can be stored under water, where it can be obtained when all about is frozen, and in which to have an under water way to his home and hiding-place, and a refuge near the wood he eats. But he does not use his tail as a trowel in plastering mud on his dams, as is frequently stated. He also builds canals nearly a yard wide down which to float wood when his nearby supply is exhausted. In building a dam, soft mud is dug up with the front paws and held to the chest while the beaver swims to the dam. Then he pats it down with his front paws. Sticks four or five feet long, from which he has eaten all the bark he desires, are brought and laid on crosswise to strengthen the dam. Dams over fifty feet long are built, and long dams are made to bow up stream. He builds houses when the banks of the stream where he lives are too low for burrows, as is usually the case. He is usually social, but old bachelors sometimes become hermits. When the pond community gets too populous, the old accompany the young pair, starting in the fall when food is plenty, and assist them to select a new place where the young pair makes a pond and starts a new colony. The houses are piles of poles plastered with mud, the entrance being surely below water. When attacked at home the beaver goes into deep water.

The beaver is found from the northern limit of trees south to Texas and east to Nova Scotia, but he has been so hunted for his valuable fur that but few of the original numbers exist to-day. Three kinds of beaver are found in the Rocky Mountains.

Living specimens of Canadian Beaver may be seen within two miles of Banff.

No. L.—Stump of tree felled by beaver in Rocky Mountains Park.

MARMOT

HOARY MARMOT, LARGE MARMOT, WHISTLER,
Arctomys columbianus.

THE Marmot, resembling closely a large woodchuck, often takes up its station on some ledge or rock and sends its piercing voice, like an intermittent steam whistle, far up and down the mountain. They are so abundant or little molested as to be seen more often than the larger game animals.

Living specimens may be seen in the Zoo.

No. 57.—Hoary Marmot. Received from Geological Survey, Ottawa, 1895.

YELLOW-FOOTED MARMOT, *Marmota flaviventer avarus*.

No. 56.—Yellow-footed Marmot, female. Taken April 2, 1898. Purchased in 1900.

BADGER

AMERICAN BADGER, *Taxidea taxus*, Schreber.

THE Badger is smaller than the wolverine and larger than the skunk, is heavy and slow of foot, has a thick flat body, short tail, very short legs, very large claws on his front feet, a thick skin, and long hair of a greyish colour, with irregular transverse bands of black on his back, and is dirty white below. The centre of his face is black with a white stripe down the middle of his head.

He is savage and sullen and makes an impossible pet. He is more of a meat eater and flat lands lover than his European relative who loves to hide in dark forests. He is timid, gentle and useful if unmolested since, though he eats useful partridges, he devours also noxious gophers, ground squirrels, and field mice, digging them out in spite of their skill as rapid tunnel builders. He also eats other ground vermin, such as snakes, beetles, grasshoppers, and even finds food in the desert, where it would seem a meat eater would surely starve.

He lives in burrows that he digs, and is so cautious in the day time as seldom to be seen. If surprised, he prefers to lie low and flat, rather than to run for his hole, and looks like a hummock. He is so fat in the spring as to lead to the belief that he lies dormant in cold weather. He lives in the country from the Rocky Mountains to the Pacific Coast, from Mexico to Yukon, east to the Great Lakes and South to Texas.

Living specimens may be seen in the Zoo.

No. 38.—American Badger. Received from the Geological Survey, Ottawa, 1895.

MARTEN

MARTEN, AMERICAN SABLE, PINE MARTEN, *Mustela americana*, Turton.

THIS eager, excitable animal likes to watch from a safe place, but is not as apprehensive of man as the otter. He is of a rich brown colour, lighter below, and the size of a cat; in fact he looks somewhat like a young red fox. His feet being broad and furred, he can travel on the snow and overtake a mink, weasel or rabbit.

The great horned owl and the fisher occasionally kill him, but very few flesh eaters care to eat him except in great hunger, on account of his musky odor, though he has less of this than the other members of the weasel tribe. He is unsuspicious and easily trapped. He is a meat eater and enjoys many kinds of small animals, including rodents, birds, and even reptiles, giving preference to rabbits, red squirrels, and partridge. He chases these by scent rather than by sight, and is sure to tire out even the rabbit. He is the destruction and terror of all small wild animals, but an honest hunter, killing only what he eats, and as he shuns civilization the hen roost is not often molested by him. He also eats eggs, beech nuts and small fruits.

His life is usually spent in rocky mountains, among the trees of a thick old evergreen forest where are many dead trees, leaning, fallen and half buried. Here he acts squirrel-like, racing from tree-top to tree-top along fallen trees. In summer he loves to stay in swamps. He builds his home of moss and leaves in a hole high in a tree. Such a hole as is used by the large woodpeckers or squirrels just suits him. There are often as many as six kittens born in the spring.

He ranges in northern North America, but always moves away from settlements. He is rare because he has been hunted vigorously for his fur, which is highly prized.

Living specimens may be seen in the Zoo.

No. 36.—Marten. From Alberta, 1901. Purchased in 1903.

WOLVERINE

WOLVERINE, GLUTTON, CARCAJOU, MOUNTAIN
DEVIL, SKUNK BEAR, *Gulo luscus*, Linne.

THE Wolverine is typical of the cold country, being heavy and of gluttonous capacity. This bear-like or badger-like meat eater of the active and sinuous weasel-marten family,

walks on the soles of his feet, not on his toes like many other animals, and has shaggy, blackish brown hair, with a yellowish band on the rear of each side joining over the hips. He is sullen, cautious, criminally bad tempered, shrewd, cunning, strong and as large as a bull dog. He cannot climb or run well, but is an enduring trampler.

He is the animal world's greatest thief, takes the stores of men and meat eating animals, no matter how cleverly hidden, even unbaited traps, and so is cordially hated by Indians and trappers. He will steal from a string of traps miles long, taking the baits, captured game, and even the traps themselves. He destroys property useless to him and soils food that he cannot use or transport. If his huge stomach will not hold all, he buries what is left, and so fouls it that other animals will shun it even though hungry. He smells out and eats birds, mice, lemmings, fox cubs and other young animals, reptiles and insects.

His home is a burrow. Half a dozen young are born in mid-summer. They are lighter coloured than their commendably affectionate mother, who fearlessly defends them against all comers, even man. He formerly lived in the north country from beyond the limit of trees to the Rocky and Adirondack Mountains, as far south as Salt Lake City.

No. 35.—Wolverine. From Alberta, 1902. Received 1903.

No. 3.—Skull of Wolverine, about one year old. From Alberta. Presented by R. Robertson, July 19, 1906.

3. Birds of the Rocky Mountains Park

BIRDS

BIRDS are that class of warm-blooded, two-legged animals, having a back bone, that lay eggs, are clothed with feathers, have a bill without teeth, except in extinct species, and are built to fly. In a few species the ability to fly has been largely or completely lost, due to neglect in exercising it.

The chief birds of the Rocky Mountains Park are as follows:

A. DIVING BIRDS

- I. Grebes
- II. Loons

B. LONGWINGED SWIMMERS

- I. Gulls
- II. Terns

C. SWIMMERS WITH WEBS TO FOUR TOES

- I. Cormorants
- II. Pelicans

D. SWIMMERS WITH WEBS TO THREE TOES

- I. Ducks
- II. Geese
- III. Swans

E. HERONS ETC.

- I. Herons

F.

- I. Cranes

G. RAILS AND COOTS

- I. Rails

H. SHORE BIRDS

- I. Phalaropes
- Snipe
- Sandpipers
- Plover

I.

I. Grouse

J. PIGEONS, ETC.

I. Pigeons

K. BIRDS OF PREY

- I. Vultures
- II. Hawks and Eagles
- III. Falcons
- IV. Ospreys

L.

I. Owls

M.

- I. Cuckoos
- II. Kingfishers

N.

I. Woodpeckers

O.

- I.
 - Nighthawks
 - Swifts
- II. Hummingbirds

P.

I. Flycatchers

Q.

- I. Larks
- II.
 - Magpies
 - Jays
 - Crows
- III. Blackbirds and Orioles
- IV. Sparrows and Finches
- V. Tanagers
- VI. Swallows
- VII. Waxwings
- VIII. Shrikes
- IX. Vireos
- X. Warblers
- XI. Wagtails
- XII. Dippers

- XIII. Wrens
- XIV. Nuthatches
- XV. Chickadees
- XVI. Kinglets
- XVII. Thrushes, Solitaires and Bluebirds

GREBES

WESTERN GREBE, 1. *Æchmophorus occidentalis*.

ALL grebes have lobate-webbed feet, that is, each toe has its individual web, being joined to its fellow only for a short distance at the base.

This, the largest of our grebes, 25 to 29 inches, is frequently known as the "Swan Grebe" because of its extremely long, thin neck. In summer the back of the neck is black, but in winter it is grey like the back.

Notes.—Loud, quavering and cackling.

Nest.—A floating mass of decayed rushes, sometimes attached to upright stalks. The 2 to 5 eggs are pale, bluish-white, usually stained (2.40 x 1.55). They breed in colonies.

Range.—Western North America, from the Dakotas and Manitoba to the Pacific, and north to southern Alaska. Winters in the Pacific Coast States and Mexico.—*From Bird Guide*.

Nos. 426, 427, 428.—Western Grebe. From Bow River, Banff, Alberta, May 9, 1913. Collected by N. B. Sanson.

No. 7.—Egg of Western Grebe. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

HOLBÆLL GREBE, 2. *Colymbus holbælli*.

Living specimens may be seen at large near the Museum from May to June.

No. 408.—Holbæll Grebe. From Indian Head, Saskatchewan, May 14, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 409.—Holbæll Grebe. From Osoyoos Lake, British Columbia, June 3, 1905. Received from the Geological Survey, Ottawa, 1907.

HORNED GREBE, 3. *Colymbus auritus*.

Living specimens may be seen at large near the Museum from May to June.

No. 410.—Horned Grebe. From Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 411.—Horned Grebe. May 3, 1904. Received from the Geological Survey, Ottawa, 1907.

EARED GREBE, 4. *Colymbus nigricollis californicus*.

PIED-BILLED GREBE, 6. *Podilymbus podiceps*.

No. 8.—Egg of Pied-billed Grebe. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

LOONS

LOON, GREAT NORTHERN DIVER, 7. *Gavia immer*.

IN form, loons resemble large grebes, but their feet are full-webbed like those of a duck; they have short, stiff tails and long, heavy, pointed bills. They have no tufts or ruffs in breeding season, but their plumage changes greatly. The common loon is very beautifully and strikingly marked with black and white above, and white below; the head is black, with a crescent across the throat and a ring around the neck. In winter they are plain grey above and white below. 31 to 35 inches.

Loons are fully as expert in diving and swimming as are the grebes. They are usually found in larger, more open bodies of water.

Notes.—A loud, quavering, drawn-out “wah-hoo-o-o.”

Nest.—Sometimes built of sticks, and sometimes simply a hollow in the sand or bank under overhanging bushes, usually on an island. The 2 eggs are brownish with a few black specks (3.50 x 2.25).

Range.—N. A., breeding from northern U. S. northwards; winters from northern U. S. southwards.—*From Bird Guide*.

No. 395.—Loon. From Kamloops, British Columbia, 1889. Received from the Geological Survey, Ottawa, 1895.

No. 396.—Loon. From Rocky Mountains Park, 1903. Purchased May, 1903.

No. 9.—Egg of Loon. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BLACK-THROATED LOON, 9. *Gavia arctica*.

Possible straggler.

PACIFIC LOON, 10. *Gavia pacifica*.

Possible straggler.

RED-THROATED LOON, 11. *Gavia stellata*.

Possible straggler.

JAEGERS

POMARINE JAEGER, 36. *Stercorarius pomarinus*.
Possible straggler.

PARASITIC JAEGER, 37. *Stercorarius parasiticus*.
Possible straggler.

LONG-TAILED JAEGER, 38. *Stercorarius longicaudus*.
Possible straggler.

GULLS

GLAUCOUS GULL, 42. *Larus hyperboreus*.

PLUMAGE white with a pearl grey mantle; no black in the plumage, the primaries being white or greyish; bill and eye yellow, the former with a red spot at the end of the lower mandible; feet flesh colour. In winter the head is slightly streaked with brownish. Young birds are mottled greyish-brown and white, of varying shades, but always lighter than the young of the Herring Gull. Some specimens are very beautiful, being entirely white, with a few spots of brownish on the back, resembling the markings of a light-colored Snowy Owl. This species is one of the largest and most powerful of the gull family, only surpassed by the Great Black-backed Gull. 28 inches.

Nest.—Usually a bulky structure of grasses, seaweed, and moss placed on the ground; the two or three eggs are brownish-grey with brown and black spots (3. x 2.20).

Range.—Breeds from Labrador and Hudson Bay northward; winters south to New England, the Great Lakes, and California.—*From Bird Guide*.

No. 397.—Glaucous Gull. Juvenile. From Queen Charlotte Sound, British Columbia, September, 26, 1885. Received from the Geological Survey, Ottawa, 1895.

HERRING GULL, 51. *Larus argentatus*.

CALIFORNIA GULL, 53. *Larus californicus*.

No. 398.—California Gull. From Douglas, British Columbia, April 16, 1906. Received from the Geological Survey, Ottawa, 1907.

No. 399.—California Gull. Received from the Geological Survey, Ottawa, 1907.

RING-BILLED GULL, 54. *Larus delawarensis*.

No. 400.—Ring-billed Gull. From Douglas, British Columbia. Received from the Geological Survey, Ottawa, 1907.

FRANKLIN GULL, 59. *Larus franklini*.

No. 401.—Franklin Gull. From Indian Head, Saskatchewan, May, 1892. Received from the Geological Survey, Ottawa, 1907.

BONAPARTE GULL, 60. *Larus philadelphia*.

No. 402.—Bonaparte Gull. From Douglas, British Columbia, April 17, 1906. Received from the Geological Survey, Ottawa, 1907.

No. 403.—Bonaparte Gull. From Douglas, British Columbia, April 19, 1906. Received from the Geological Survey, Ottawa, 1907.

SABINE GULL, 62. *Xema sabini*. Possible straggler.**TERNs****CASPIAN TERN, 64. *Sterna caspia*.****FORSTER TERN, 69. *Sterna forsteri*.**

NO crest on this or any of the following terns. Tail forked 4 inches; below pure white. In summer, with bill and feet orange red; crown black. In winter the forehead is white, but there is a blackish patch about the eyes. These beautiful birds are often known as "Sea Swallows," because of their similarity in form and flight to those well known land birds. They are the embodiment of grace as they dart about high in the air, bill pointed downward, alert and ready to dart down upon any small fish or eel that may attract their fancy. They usually get their food by plunging. 15 inches.

Notes.—A sharp, twanging "cack."

Nest.—A hollow in the ground, in which the 3 eggs are laid in June. Eggs whitish, greenish, or brownish, variously marked with brown, black, and lavender (1.80 x 1.30).

Range.—Breeds in the interior, north to Manitoba, and on the coasts to Virginia and California. Winters from the Gulf States southward.—*From Bird Guide*.

No. 21.—Egg of Forster Tern. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

COMMON TERN, 70. *Sterna hirundo*.

No. 404.—Common Tern. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 19.—Egg of Common Tern. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

No. 20.—Egg of Tern. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

ARCTIC TERN, 71. *Sterna paradisæa*. Possible straggler.

BLACK TERN, 77. *Hydrochelidon nigra surinamensis*.

No. 405.—Black Tern. From Indian Head, Saskatchewan, June 20, 1892.
Received from the Geological Survey, Ottawa, 1895.

No. 406.—Black Tern. From Indian Head, Saskatchewan, June 27, 1892.
Received from the Geological Survey, Ottawa, 1895.

No. 407.—Black Tern. From Indian Head, Saskatchewan, May 27, 1892.
Received from the Geological Survey, Ottawa, 1895.

No. 22.—Egg of Black Tern. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

CORMORANTS

DOUBLE-CRESTED CORMORANT, 120. *Phalacrocorax auritus auritus*.

TAIL with 12 feathers; distinguished from the cormorant in any plumage by the shape of the gular sac; on the common Cormorant the feathers on the throat extend forward to a point, making the hind end of the pouch heart-shaped, while in the present species it is convex. In breeding plumage this species has a tuft of black feathers on either side of the head. The throat pouch is orange yellow; eyes green. These cormorants are found to some extent along the Atlantic coast, in summer, from Maine northward, but they are chiefly birds of the interior, being particularly abundant in Manitoba. 30 inches.

Nest.—On ledges on the coast, and on the ground in the interior, or in trees. The nests are made of sticks and weeds, shallow, shabby platforms holding 3 or 4 eggs. The eggs are bluish-green and chalky.

Range.—Breeds from Maine, on the coast, and Minnesota northward; locally in North Carolina. Winters in the Gulf States. The Florida Cormorant, 120a., found in the South Atlantic and Gulf States, is smaller.—*From Bird Guide*.

No. 389.—Double Crested Cormorant. From Indian Head, Saskatchewan, 1891. Received from the Geological Survey, Ottawa, 1895.

PELICANS

AMERICAN WHITE PELICAN, 125. *Pelecanus erythrorhynchos*.

WHITE, with black primaries. Eye white; bill and feet yellow, the former in the breeding season being adorned with a thin upright knob about midway on the top of the upper mandible. The large pouch, with which pelicans are armed,

is used as a dip net to secure their food, which consists of small fish. The White Pelican scoops up fish as he swims along the surface of the water; when he has his pouch partially filled, he tilts his head, contracts the pouch, thereby squeezing the water out of the sides of his mouth, and swallows his fish. 5 feet.

Nest.—Of sticks and weeds on the ground on islands or shores of inland lakes. They breed in colonies, and lay their eggs in June. The two or three eggs are pure white (3.45 x 2.30).

Range.—Breeds in the interior from Utah and Minn. northward. Winters on the Gulf coast and in Florida; rare on the Atlantic coast.—*From Bird Guide*.

No. 423.—American White Pelican. From Alberta. Purchased February 7, 1912.

DUCKS

AMERICAN MERGANSER, 129. *Mergus americanus*.

BILL and feet red in male, the former with a black stripe along the top; plumage black and white, with a greenish-black head; no crest. Female grey and white, with brown head, crested; chin white, eye yellow. These birds have the bill long, not flattened, but edged with sharp teeth to grasp the fish, upon which they live to a great extent. They are exceptionally good swimmers for members of this family, and can chase and catch their fish, using their wings to aid their legs in propelling them through the water. 25 inches.

Nest.—In holes of trees, cavities among the rocks, or less often on the ground. The nest is made of leaves and grasses and lined with downy feathers from the breast of the female. The 6 to 9 eggs are creamy-buff (2.7 x 1.75); June.

Range.—Whole of North America. Breeds from New Brunswick, North Dakota, and California, northward. Winters from the northern boundary of the U. S. south to the Gulf of Mexico.—*From Bird Guide*.

Nos. 385, 386, 387, 388—American Merganser. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa 1895.

RED-BREASTED MERGANSER, 130. *Mergus serrator*.

No. 384—Red-Breasted Merganser. From Victoria, British Columbia, May, 1893. Received from the Geological Survey, Ottawa, 1895.

HOODED MERGANSER, 131. *Lophodytes cucullatus*.

No. 383.—Hooded Merganser. From Revelstoke, British Columbia, April 11, 1890. Received from the Geological Survey, Ottawa, 1895.

MALLARD, 132. *Anas platyrhynchos*.

MALE.—Head green; speculum purplish-blue; bill olive-green; legs orange; eyes brown. The female most closely resembles the Black Duck but is lighter colored, more brownish, and the speculum, or wing patch, is always bordered with white. This species is one of the handsomest and most valuable of ducks. It is the congener of the domestic ducks, and is largely used as a table bird.

Their food consists chiefly of mollusks and tender grasses. These they usually get in shallow water by "tipping up," that is, reaching the bottom without going entirely under water. They also visit meadows and the edges of grain and rice fields for food. 23 inches.

Notes.—A nasal "quack," often rapidly repeated when they are feeding.

Nest.—Of grass, lined with downy feathers, concealed in tufts of grass near the water's edge. The 6 to 10 eggs are buffy or olive-greenish (2.25 x 1.65).

Range.—Breeds from the northern tier of States northward; winters in southern half of the U. S.—*From Bird Guide*.

Living specimens, a pair or so, occasionally may be seen at large near the Museum from April to October and occasionally remain in open warm sulphur water below the Cave and Basin all winter.

No. 362.—Mallard. From Indian Head, Saskatchewan, April 17, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 363.—Mallard. From Indian Head, Saskatchewan, April 20, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 6.—Egg of a Mallard. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BLACK DUCK, 133. *Anas rubripes*. Possible straggler.

No. 364.—Black Duck. From Manitoba, 1891. Received from the Geological Survey, Ottawa, 1895.

GADWALL, 135. *Chaulelasmus streperus*.

No. 368.—Gadwall. From Indian Head, Saskatchewan. June 14, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 5.—Egg of Gadwall. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

AMERICAN WIDGEON, BALDPATE, 137. *Mareca americana*.

No. 369.—American Widgeon. From Indian Head, Saskatchewan, May 16, 1892. Received from the Geological Survey, Ottawa, 1895.

GREEN-WINGED TEAL, 139. *Nettion carolinense*.

- No. 365.—Green-winged Teal. From Indian Head, Saskatchewan, May 6, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 366.—Green-winged Teal. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 4.—Egg of Green-winged Teal. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BLUE-WINGED TEAL, 140. *Querquedula discors*.

- No. 367.—Blue-winged Teal. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

CINNAMON TEAL, 141. *Querquedula cyanoptera*. Straggler.

SHOVELLER, 142. *Spatula clypeata*.

- No. 370.—Shoveller. From Indian Head, Saskatchewan, May 27, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 1.—Egg of Shoveller. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

PINTAIL, 143. *Dafila acuta*.

- No. 371.—Pintail. From Indian Head, Saskatchewan, June 14, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 372.—Pintail. From Indian Head, Saskatchewan, June 16, 1892. Received from the Geological Survey, Ottawa, 1895.

WOOD DUCK, 144. *Aix sponsa*. Possible straggler.

REDHEAD, 146. *Marila americana*.

CANVAS-BACK, 147. *Marila valisineria*,

- No. 373.—Canvas-back Duck. From Indian Head, Saskatchewan, June 28, 1892. Received from the Geological Survey, Ottawa, 1895.

SCAUP DUCK, 148. *Marila marila*.

- No. 376.—Scaup Duck. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 2.—Egg of Scaup Duck. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

LESSER SCAUP DUCK, 149. *Marila affinis*.

- No. 375.—Lesser Scaup Duck. From Indian Head, Saskatchewan, April 16, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 3.—Egg of Lesser Scaup Duck. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

RING-NECKED DUCK, 150. *Marila collaris*.

AMERICAN GOLDEN-EYE, 151. *Clangula clangula americana*.

No. 374.—American Golden-eye. From Revelstoke, British Columbia, April 19, 1892. Received from the Geological Survey, Ottawa, 1895.

BARROW GOLDEN-EYE, 152. *Clangula islandica*.

BUFFLE-HEAD, 153. *Charitonetta albeola*.

Living specimens may be seen at large near the Museum from May to June.

Nos. 377, 378, 379.—Buffle-head. From Banff, Alberta. Collected by N. B. Sanson, April 30, 1908.

No. 380.—Buffle-head. From Banff, Alberta. Collected by N. B. Sanson April 27, 1906.

OLD-SQUAW, LONG-TAILED DUCK, 154. *Harelda hyemalis*.

HARLEQUIN DUCK, 155. *Histrionicus histrionicus*.

KING EIDER, 162. *Somateria spectabilis*. Possible straggler.

AMERICAN SCOTER, 163. *Oidemia americana*. Straggler only.

No. 390.—American Scoter. From Saskatchewan. Received from the Geological Survey, Ottawa, 1903.

WHITE-WINGED SCOTER, 165. *Oidemia deglandi*.

Nos. 391, 392.—White-winged Scoter. From Saskatchewan. Received from the Geological Survey, Ottawa, 1903.

SURF SCOTER, 166. *Oidemia perspicillata*.

No. 393.—Surf Scoter. From Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

No 394.—Surf Scoter. From Douglas, Manitoba, April 18, 1906. Received from the Geological Survey, Ottawa, 1907.

RUDDY DUCK, 167. *Erismatura jamaicensis*.

No. 381.—Ruddy Duck. May 11, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 382.—Ruddy Duck. From Chilliwack, British Columbia, October 18, 1901. Received from the Geological Survey, Ottawa, 1907.

No. 00.—Egg of Duck. From near Edmonton, Alberta. Presented by visitor.

GEESE

LESSER SNOW GOOSE, 169. *Chen hyperboreus hyperboreus*.

ROSS SNOW GOOSE, 170. *Chen rossi*.

AMERICAN WHITE-FRONTED GOOSE, 171a. *Anser albifrons gambeli*.

CANADA GOOSE, 172. *Branta canadensis canadensis*.

THE best known and most widely distributed of our geese. In the northern States they are always eagerly looked for in the spring, for their arrival is a sure indication that the backbone of winter has broken. Their familiar honking is heard long before the thin, wavering, black V-shaped line appears on the horizon; as it draws nearer, the volume of sound increases, resembling the baying of a pack of hounds, and at last, the flock sweeps overhead with deafening cries; large birds, with long necks fully outstretched, wings beating the air in unison, and all following the leadership of one bird in their journey over their invisible path. 38 inches.

Nest.—Of grasses and feathers, on marshes or near ponds; 4 to 9 buffy drab eggs (3.50 x 2.50); May, June.

Range.—Breeds from Labrador, Dakota, and British Columbia northward; winters in Southern U. S. Hutchins Goose, 172a., (*B. c. hutchinsii*) is smaller (31 inches) and found in Western N. A., casually east of the Miss. Cackling Goose, 172c., (*B. c. minima*) is still smaller (24 inches); is found in the same range.—*From Bird Guide*.

Living specimens may be seen in the Zoo and at large near the Museum from May to June.

No. 412.—Canada Goose. From Saskatchewan, June 16, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 413.—Canada Goose. From Indian Head, Saskatchewan, June 16, 1892. Received from the Geological Survey, Ottawa, 1895.

HUTCHINS GOOSE, 172a. *Branta canadensis hutchinsi*.

ACKLING GOOSE, 172c. *Branta canadensis minima*.

SWANS

WHISTLING SWAN, 180. *Olor columbianus*.

NOSTRIL situated at a greater distance from the eye than it is from the end of the bill; a small yellow spot on the bare space in front of the eye; plumage entirely white; bill and legs black. This is the swan that is found on the Atlantic coast, and is most abundant in the Miss. Valley. It is rare north of

Chesapeake Bay, but it is abundant from there southward, in winter. They make a beautiful sight against the blue sky, their immense white wings slowly fanning the air and their long necks extended. 54 inches.

Notes.—A peculiar, flageolet-like "Who, who, who." Elliott.

Nest.—A mass of weeds, grass, and feathers on the ground; 3 to 6 greenish-buff eggs (4.00 x 2.75).

Range.—Breeds within the Arctic Circle; winters south to the Gulf of Mexico; rare north of Va. on the Atlantic.

Trumpeter Swan, 181, (*Olor buccinator*) is larger (65 inches) and is found west of the Miss. It breeds from Ia., northwards. Nostril midway between eye and tip of bill.—*From Bird Guide.*

No. 414.—Whistling Swan. From Manitoba, 1878. Received from the Geological Survey, Ottawa, 1895.

TRUMPETER SWAN, 181. *Olor buccinator.*

HERONS

AMERICAN BITTERN, 190. *Botaurus lentiginosus.*

No. 75.—Three eggs from nest of five of American Bittern. From Banff, Alberta, June 27, 1911. Collected by N. B. Sanson.

Nos. 429, 430.—American Bittern. From Banff, Alberta, May 26, 1913. Collected by N. B. Sanson.

GREAT BLUE HERON, 194. *Ardea herodias herodias.*

ADULT Blue Herons are very handsome birds. Young birds, and nine out of ten that we see will be young birds, are much duller colored and have no plumes. It takes several years for them to attain their perfect plumage. Their nests are usually placed in the tops of the tallest trees and are, consequently, difficult to get at. In some heronries, trees have been found containing as many as 40 nests. In flight, herons always carry their head drawn in against the shoulders, the neck being curved below. 48 inches.

Nest.—A platform of sticks in tall trees in wet woods. 3 or 4 pale greenish-blue eggs (2.50 x 1.50); May, June.

Range.—Breeds locally throughout the United States and Canada, either in colonies, or single pairs where they are persecuted as in New England; winters in Southern U. S. Ward Heron, 149b, (*A. h. wardi*) is similar but lighter below and the neck is darker and browner; it abounds in Florida.

—*From Bird Guide.*

No. 415.—Great Blue Heron. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

BLACK-CROWNED NIGHT HERON, 202. *Nycticorax nycticorax naevius*. Straggler.

CRANES

WHOOPING CRANE, 204. *Grus americana*.

LITTLE BROWN CRANE, 205. *Grus canadensis*.

SANDHILL CRANE, 206. *Grus mexicana*.

RAILS AND COOTS

VIRGINIA RAIL, 212. *Rallus virginianus*.

No. 30—Egg of Virginia Rail. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

CAROLINA RAIL, SORA, 214. *Porzana carolina*.

ADULTS with the face and throat black. Young with no black on the head. This species is not apt to be confused with any, except, possibly, the Virginia Rail, which is somewhat larger, and always has the breast conspicuously cinnamon colour. These birds are very abundant in nearly their whole range, but they are so secretive in their habits that their presence is often not noticed. Unless disturbed, they pass the greater portion of the day in slumber, and do most of their feeding after dusk, when their confused, clucking notes are heard all over the marshes. All of the rails have this habit of feeding chiefly at night, perhaps through fear of enemies during the daytime, for they seem to be very timid birds. 8.5 inches.

Notes.—A rapid clucking, "kuk, kuk, kuk," etc.

Nest.—A rude structure of grass and rushes on the ground in either salt or fresh marshes; 6 to 16 buff colored eggs with reddish-brown specks.

Range.—Breeds in the northern half of the U. S. and northwards; winters in the southern half.—*From Bird Guide*.

No. 355.—Sora Rail. From Banff, Alberta, July 15, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 354.—Sora Rail. May 2, 1905. Received from the Geological Survey, Ottawa, 1907.

YELLOW RAIL, 215. *Coturnicops noveboracensis*.

AMERICAN COOT, "MUD HEN," 221. *Fulica americana*.

BILL and frontal shield as in the gallinules, but the bill is whitish with blackish ring near the tip; each individual toe is furnished with a large scalloped web; otherwise their plumage is greyish like that of the Florida Gallinule. Coots are, locally, very abundant throughout temperate North America in summer. Like gallinules, they inhabit reedy pools, sluggish streams, and boggy marshes, where they are at least safe from human pursuit. They conceal themselves among the reeds, so as to escape observation, taking wing only when they are obliged to. They are expert swimmers, and can dive and swim for long distances under water; in this respect they have a decided advantage over the rails and gallinules. 15 inches.

Nest.—Like that of the gallinules; 6 to 15 greyish eggs, finely speckled with black (1.80 x 1.30). May, June.

Range.—Breeds throughout temperate America, rare on the North Atlantic coast; winters in southern U. S.

—*From Bird Guide*.

No. 360.—American Coot. From Victoria, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 361.—American Coot. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 17.—Egg of American Coot. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

PHALAROPES

RED PHALAROPE, 222. *Phalaropus fulicarius*. Probable straggler.

NORTHERN PHALAROPE, 223. *Lobipes lobatus*.

No. 422.—Phalarope. Juvenile. From Banff, Alberta. August 9, 1911. Collected by N. B. Sanson.

No. 356.—Northern Phalarope. From Indian Head, Saskatchewan, 1891, Received from the Geological Survey, Ottawa, 1895.

WILSON PHALAROPE, 224. *Steganopus tricolor*.

No. 357.—Wilson Phalarope. From Indian Head, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 358.—Wilson Phalarope. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

AVOCETS

AMERICAN AVOCET, 225. *Recurvirostra americana*.

No. 328.—American Avocet. Received from the Geological Survey, Ottawa, 1895.

No. 329.—American Avocet. From Indian Head, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 23.—Egg of Avocet. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

SNIPES, SANDPIPERS AND PLOVERS

SNIPES

WILSON SNIPE, 230. *Gallinago delicata*.

BILL very long, but not as heavy as that of the Woodcock, eyes not abnormally large; head striped with black and whitish; back handsomely variegated with black, brown, and white; sides barred with black and white. The Snipe frequents more open country than the Woodcock, being found in marshes or along open brooks. Like the Woodcock, they often lie still and trust to their colours to prevent their being seen, but if they are observed, and they are always on the alert, they instantly take wing and pursue a zigzag course out of sight. Like the last species they procure their food by boring, the tip of the bill being flexible, so they can grasp their food when they feel it. 11 inches.

Notes.—A sharp, harsh whistle as they take wing.

Nest.—Depressions in the grassy edges of ponds or marshes; eggs olive gray, marked with blackish (1.50 x 1.10); May, June.

Range.—Breeds from the northern tier of States northward. Winters in southern U. S.—*From Bird Guide*.

Nos. 331, 332.—Wilson Snipe. From Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

LONG-BILLED DOWITCHER, 232. *Macrorhamphus griseus scolopaceus*.

No. 336.—Long-billed Dowitcher. 1892. Received from the Geological Survey, Ottawa, 1895.

No. 337.—Long-billed Dowitcher. From Indian Head, Saskatchewan, June 27, 1892. Received from the Geological Survey, Ottawa, 1895.

SANDPIPERS

STILT SANDPIPER, 233. *Micropalama himantopus*.

BILL slender and only moderately long. In summer, the entire underparts are rusty-white, barred with blackish; ear coverts and top of head browner; back mixed brown and black. In winter they are grey above and whitish below, with the breast streaked with dusty. They seem to be one of the least abundant of our shore birds, single individuals being found in flocks of other species, rather than in flocks of themselves. They are usually more shy than the birds with which they are associated, perhaps because they lack companionship of their own kind. They have a musical whistle, not distinctive from that of many others of our small shore birds. 8.5 inches.

Nest.—The three or four eggs are laid in a hollow in the ground, usually in the grass back from the beach; eggs greyish, blotched with various shades of brown.

Range.—Eastern North America, breeding in the Arctic regions and migrating through the United States to South America, chiefly on the Atlantic coast.—*From Bird Guide*.

No. 330.—Stilt Sandpiper. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

KNOT, 234. *Tringa canutus*.

PECTORAL SANDPIPER, 239. *Pisobia maculata*.

No. 334.—Pectoral Sandpiper. From Indian Head, Saskatchewan, May, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 335.—Pectoral Sandpiper. From Indian Head, Saskatchewan, May 28, 1892. Received from the Geological Survey, Ottawa, 1895.

WHITE-RUMPED SANDPIPER, 240. *Pisobia fuscicollis*.
Possibly straggler only.

BAIRD SANDPIPER, 241. *Pisobia bairdi*.

No. 333.—Baird Sandpiper. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

LEAST SANDPIPER, 242. *Pisobia minutilla*.

RED-BACKED SANDPIPER, 243a. *Pelidna alpina sakhalina*.

SEMIPALMATED SANDPIPER, 246. *Ereunetes pusillus*.

WESTERN SANDPIPER, 247. *Ereunetes mauri*.

SANDERLING, 248. *Calidris leucophæa*.

No. 340.—Sanderling. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

MARBLED GODWIT, 249. *Limosa fedoa*.

No. 341.—Marbled Godwit. From Indian Head, Saskatchewan, June 24, 1892. Received from the Geological Survey, Ottawa, 1895.

GREATER YELLOW-LEGS, 254. *Totanus melanoleucus*.

YELLOW-LEGS, 255. *Totanus flavipes*.

No. 343.—Yellow-legs. From Indian Head, Saskatchewan, April 25, 1892. Received from the Geological Survey, Ottawa, 1895.

SOLITARY SANDPIPER, 256. *Helodromas solitarius solitarius*.

WESTERN SOLITARY SANDPIPER, 256a. *Helodromas solitarius cinnamomeus*.

WESTERN WILLET, 258a. *Catoptrophorus semipalmatus inornatus*.

No. 345.—Western Willet. From Indian Head, Saskatchewan, May 6, 1892. Received from the Geological Survey, Ottawa, 1907.

BUFF-BREASTED SANDPIPER, 262. *Tryngites subruficollis*.

SPOTTED SANDPIPER, 263. *Actitis macularius*.

Living specimens may be seen at large near the Museum from June to August or September.

No. 338.—Spotted Sandpiper. From Indian Head, Saskatchewan, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 339.—Spotted Sandpiper. From Ontario. Received from the Geological Survey, Ottawa, 1895.

No. 26.—Egg of Spotted Sandpiper. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

LONG-BILLED CURLEW, 264. *Numenius americanus*.

No. 346.—Long-billed Curlew. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 18.—Egg of Long-billed Curlew. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

PLOVERS

BLACK-BELLIED PLOVER, 270. *Squatarola squatarola*.

HIND toe very small. Bill short and stout. Adults in summer with the back, wings, and tail barred or marked with black and white; top of head and nape white, except for a few black markings on the crown; face, throat, breast, and fore part of belly black. In winter brownish-black, mottled above; below dull white. Young similar to winter adults, but the back is spotted with yellowish-white. While these handsome plover migrate to some extent, and sometimes in large flocks, through the interior of the United States, they are chiefly and most abundantly found on the coast. They are the plover most eagerly sought by gunners. 11.5 inches.

Call.—A plaintive whistle, "ter-lee."

Nest.—Grass-lined hollows in marshes or dry land, back from the beach; eggs greenish-buff, spotted with black.

Range.—Breeds in the Arctic regions; winters in South America, migrating through the U. S. in Sept. and May.

—*From Bird Guide*.

No. 347.—Black-bellied Plover. From Indian Head, Saskatchewan, September 15, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 348.—Black-bellied Plover. From Douglas, British Columbia, May 3, 1906. Received from the Geological Survey, Ottawa, 1907.

No. 349.—Black-bellied Plover. From Indian Head, Saskatchewan, 1891. Received from the Geological Survey, Ottawa, 1895.

AMERICAN GOLDEN PLOVER, 272. *Charadrius dominicus dominicus*.

KILLDEER, 273. *Oxyechus vociferus*.

No. 350.—Killdeer. From Indian Head, Saskatchewan, September, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 351.—Killdeer. May 8, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 25.—Egg of Killdeer. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

SEMIPALMATED PLOVER, 274. *Ægialitis semipalmata*.

No. 69.—Egg of Plover. From Alberta. Presented by J. Simpson, Banff, Alberta.

No. 68.—Egg of Plover. From Alberta.

RUDDY TURNSTONE, 283a. *Arenaria interpres morinella*.

No. 352.—Ruddy Turnstone. From Indian Head, Saskatchewan, May 23, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 353.—Ruddy Turnstone. From Indian Head, Saskatchewan, May 23, 1891. Received from the Geological Survey, Ottawa, 1895.

GROUSE

RICHARDSON GROUSE, 297b. *Dendragapus obscurus richardsoni*.

Living specimens may be seen at large on Sulphur Mountain and other mountains near Banff during the entire year.

No. 323.—Richardson Grouse. From Banff, Alberta. Received from N. B. Sanson, Fall 1905.

No. 324.—Richardson Grouse. May 4, 1904. Received from the Geological Survey, Ottawa, 1907.

No. 325.—Richardson Grouse. From Canmore, Alberta, May 26, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 64.—Egg of Richardson Grouse. From Banff, Alberta. Collected by N. B. Sanson.

Nos. 65, 66, 67.—Eggs of Richardson Grouse. From Alberta. Presented by J. Simpson, Banff, Alberta.

FRANKLIN GROUSE, 299. *Canachites franklini*.

Living specimens may be seen near the Museum during the entire year.

No. 322.—Franklin Grouse. From Sproat, Columbia River, British Columbia, June 26, 1890. Received from the Geological Survey, Ottawa, 1895.

HUDSONIAN SPRUCE GROUSE, GRAY RUFFED GROUSE, 300b. *Bonasa umbellus umbelloides*.

Living specimens may be seen at large near the Museum.

No. 320.—Gray Ruffed Grouse. April 29, 1904. Received from the Geological Survey, Ottawa, 1907.

No. 321.—Gray Ruffed Grouse. May 6, 1904. Received from the Geological Survey, Ottawa, 1907.

No. 27.—Egg of Ruffed Grouse. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

WILLOW PTARMIGAN, 301. *Lagopus lagopus lagopus*.

IN winter, white with black tail feathers. In summer, usually reddish-brown with black bars. This species has a much stouter bill than the Rock Ptarmigan. 15 inches.

Nest.—Eggs laid on the ground. Rich buffy, so heavily blotched and streaked with black as to nearly conceal it. (1.75 x 1.25).

Range.—Breeds in the northern half of Canada, migrating southward to southern Canada.

Allen Ptarmigan, 301a. (*L. l. alleni*), found in Newfoundland, is similar, but in winter the shafts of the primaries are always black.—*From Bird Guide*.

WHITE-TAILED PTARMIGAN, 304. *Lagopus leucurus leucurus.*

No. 316.—White-tailed Ptarmigan. From Gold Range Mountains at Griffin Lake, British Columbia, August, 1889. Received from the Geological Survey, Ottawa, 1895.

COLUMBIAN SHARP-TAILED GROUSE, PRAIRIE CHICKEN, 308a. *Pediæcetes phasianellus columbianus.*

No. 314.—Columbian Sharp-tailed Grouse. From Indian Head, Saskatchewan, April 6, 1892. Received from the Geological Survey, 1895.

No. 315.—Columbian Sharp-tailed Grouse. From Indian Head, Saskatchewan, April 6, 1892. Received from the Geological Survey, 1895.

PIGEONS

MOURNING DOVE, 316. *Zenaidura macroura carolinensis.*

UPPERPARTS olive-brown; below buffy-grey; a small black mark on the ears above the iridescent neck patch. These birds never flock as Passenger Pigeons did, travelling in companies of six to a dozen, and they have no common nesting or roosting places, but nest anywhere in the woods, orchards, or vines. As they are not often hunted, they are not shy, and in some localities are very tame, especially when they are breeding. Their food consists of seeds, grain, berries, and insects, most of which they get from the ground. They nest either in trees, bushes, or on the ground, most often the former. Their nests are very frail platforms, composed of only a few twigs and rootlets; when on the ground, usually no nest is made. Their two eggs are pure white, as are those of all doves. They are loving birds, always cooing to each other, and are very attentive to their young until they are full grown. 12 inches.

Range.—Breeds throughout the United States and southern Canada, except northern New England and the Provinces.

—*From Bird Guide.*

No. 311.—Mourning Dove. From Indian Head, Saskatchewan, May 23, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 312.—Mourning Dove. From Indian Head, Saskatchewan, 1890. Received from the Geological Survey, Ottawa, 1895.

VULTURES

TURKEY VULTURE, 325. *Cathartes aura septentrionalis.*

HAWKS

MARSH HAWK, HARRIER, 331. *Circus hudsonius*.

UPPER tail coverts and base of tail white. Male, blue-gray above; below whitish, streaked and barred with rusty. Female and young.—Above rusty brownish-black; below rusty with dusky streaks on the breast and sides. As shown by its name, this hawk is found most abundantly in or around marshes or wet meadows. I have found them especially abundant in boggy marshes such as frequented by bitterns. Their flight is quiet and owl-like, and they often seem like owls as they flit by without a sound. Their food is composed chiefly of meadow mice and moles, which they spy and dash down upon as they fly at low elevations. 19 inches.

Notes.—A shrill whistle when their nest is approached.

Nest.—Of grasses, on the ground in marshes; four plain bluish-white eggs. (1.80 x 1.40); May, June.

Range.—Breeds locally in the whole of the United States and Canada, north to Hudson Bay; winters in the southern half of the United States.—*From Bird Guide*.

Living specimens of some hawks may be seen in the Zoo.

No. 310.—Marsh Hawk. From Indian Head, Saskatchewan, May 26, 1892. Received from the Geological Survey, Ottawa, 1907.

No. 309.—Marsh Hawk. From Chilliwack, British Columbia, September 19, 1900. Received from the Geological Survey, Ottawa, 1907.

No. 11.—Egg of Marsh Hawk. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

SHARP-SHINNED HAWK, 332. *Accipiter velox*.

Living specimens are common at large near the Museum but not often seen.

No. 305.—Sharp-shinned Hawk. Juvenile. September, 1895. Received from the Geological Survey, Ottawa, 1907.

No. 306.—Sharp-shinned Hawk. From 6,000 feet above sea level on second Summit, August 2, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 307.—Sharp-shinned Hawk. From Banff, Alberta. Collected by N. B. Sanson, November, 1904.

No. 308.—Sharp-shinned Hawk. From Banff, Alberta. Collected by N. B. Sanson, April 29, 1909.

COOPER HAWK, 333. *Accipiter cooperi*.AMERICAN GOSHAWK, 334. *Astur atricapillus atricapillus*.

No. 303.—American Goshawk. Juvenile. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 10.—Egg of American Goshawk. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

WESTERN RED-TAIL, 337b. *Buteo borealis calurus*.

- No. 302.—Western Red-tail. From ———, May 14, 1904. Received from the Geological Survey, Ottawa, 1907.
 No. 12.—Egg of Red-tail. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

SWAINSON HAWK, 432. *Buteo swainsoni*.

- No. 300.—Swainson Hawk. From Banff, Alberta, September 4, 1891. Received from the Geological Survey, Ottawa, 1895.
 No. 301.—Swainson Hawk. From Indian Head, Saskatchewan, September 4, 1891. Received from the Geological Survey, Ottawa, 1895.
 No. 13.—Egg of Swainson Hawk. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

AMERICAN ROUGH-LEGGED HAWK, 347a. *Archibuteo lagopus sancti-johannis*.

- No. 296.—American Rough-legged Hawk. From Banff, Alberta. Purchased.
 No. 298.—American Rough-legged Hawk. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

FERRUGINOUS ROUGH-LEG, 348. *Archibuteo ferrugineus*.

- No. 297.—Ferruginous Rough-leg. From Crane Lake, Saskatchewan, June 11, 1894. Received from the Geological Survey, Ottawa, 1895.

Living specimens may be seen in the Zoo.

GOLDEN EAGLE, 349. *Aquila chrysaetos*.

LEGS feathered to the toes. Plumage blackish-brown, adults having the lengthened feathers on the nape, golden-brown, and the tail more or less mixed with white; leg feathers rusty. These large, handsome, well-built birds of prey are fairly abundant in thinly settled country west of the Miss., especially in mountains and foot-hills. They are very powerful birds, and a single pair of them will rule the whole country in which they reside. They are very shy in the presence of man and will never attack a person. Their food consists of prairie dogs, rodents, ducks, and even fawns. 35 inches.

Notes.—A shrill "kee-kee-kee."

Nest.—A very bulky structure of large sticks, lined with twigs, needles, and in some cases evergreen; eggs creamy-white; spotted, splashed, and clouded with various shades of brown and gray (2.90 x 2.50).

Range.—West of the Miss., from Mexico northward; rarely eastward to the Atlantic coast.—*From Bird Guide*.

Living specimens may be seen in the Zoo.

- No. 416.—Golden Eagle. From Crossfield, Alberta. Received from the Geological Survey, Ottawa, 1895.
 No. 417.—Golden Eagle with American Merganser as prey. Died in Corral, Banff, Alberta. Received from the Geological Survey, Ottawa, 1904.

BALD EAGLE, 352. *Haliaeetus leucocephalus leucocephalus*.

Living specimens may be seen in the Zoo, and at large along automobile road and on top of Sulphur Mountain.

No. 148.—Bald Eagle. Juvenile. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1908.

No. 431.—Bald Eagle. Purchased, 1913.

GRAY GYRFALCON, 354. *Falco rusticolus rusticolus*.
Probable straggler.

GYRFALCON, 354a. *Falco rusticolus gyrfalco*.

PRAIRIE FALCON, 355. *Falco mexicanus*.

DUCK HAWK, 356a. *Falco peregrinus anatum*.

PIGEON HAWK, 357. *Falco columbarius columbarius*.

RICHARDSON PIGEON HAWK, RICHARDSON MERLIN,
357b. *Falco columbarius richardsoni*.

AMERICAN SPARROW HAWK, 360. *Falco sparverius sparverius*.

AMERICAN OSPREY, 364. *Pandion haliaetus carolinensis*.

Living specimens may be seen at large along Bow River near the Museum in June, July, and August.

No. 293.—American Osprey. From Indian Head, Saskatchewan, 1892.
Received from the Geological Survey, Ottawa, 1895.

OWLS

AMERICAN LONG-EARED OWL, 366. *Asio wilsonianus*.

THIS species can readily be distinguished from the short-eared owl, the only one of the same size, by its long ear tufts; it is also darker, and the markings on the breast are largely in the form of bars. In the northern portions of the United States, this species is probably the most abundant of owls, excepting the little Screech Owl. It is often quite common, where its presence is little suspected, because, unless disturbed, it flies only at night and is a rather silent species. During the daytime it is usually sitting upright in the dense tops of ever-

green trees. Crows often discover them, and proclaim their hiding place to the whole neighborhood by their incessant cawing. Owls of all kinds are in disfavor with crows. 15 inches.

Notes.—A soft-toned “wo-hunk. wo-hunk.” (Bendire).

Nest.—They lay from four to seven pure white eggs, usually in old crow nests.

Range.—Resident from the Gulf to Nova Scotia and Manitoba.—*From Bird Guide.*

Living owls may be seen in the Zoo.

No. 283.—American Long-eared Owl. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 16.—Egg of American Long-eared Owl. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

SHORT-EARED OWL, 367. *Asio flammeus*.

No. 284.—Short-eared Owl. From Victoria, British Columbia, June 11, 1890. Received from the Geological Survey, Ottawa, 1895.

No. 285.—Short-eared Owl. From Indian Head, Saskatchewan, September 1, 1891. Received from the Geological Survey, Ottawa, 1895.

GREAT GRAY OWL, 370. *Scotiaptex nebulosa nebulosa*.

RICHARDSON OWL, 371. *Cryptoglaux funerea richardsoni*.

SAW-WHET OWL, 372. *Cryptoglaux acadica acadica*.

ROCKY MOUNTAIN SCREECH OWL, 373e. *Otus asio maxwelliæ*.

WESTERN HORNED OWL, 375a. *Bubo virginianus pallens*.

ARCTIC HORNED OWL, 375b. *Bubo virginianus subarcticus*. Probable straggler.

SNOWY OWL, 376. *Nyctea nyctea*.

No. 287.—Snowy Owl. From Fish Creek, Alberta. Received from the Geological Survey, Ottawa, 1900.

No. 288.—Snowy Owl. From near Calgary, Alberta. Received from the Geological Survey, Ottawa, 1901.

BURROWING OWL, 378. *Speotyto cunicularia hypogæa*. Possible straggler.

No. 289.—Burrowing Owl. From Similkameen, British Columbia, June 13, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 290.—Burrowing Owl. From Revelstoke, British Columbia, April 25, 1890. Received from the Geological Survey, Ottawa, 1895.

PIGMY OWL, 379. *Glaucidium gnoma gnoma*.

No. 291.—Pigmy Owl. From near Calgary, Alberta. Received from the Geological Survey, Ottawa, 1901.

KINGFISHERS

BELTED KINGFISHER, 390. *Ceryle alcyon*.

THE male has the breast band and sides blue-grey, like the back, while the female has chestnut-coloured sides and breast band in addition to a grey band. 13 inches.

Kingfishers may be found about ponds, lakes, rivers, the sea-side, or small creeks; anywhere that small fish may be obtained. Their food is entirely of fish that they catch by diving from their perches on dead branches, or by hovering over the water until the fish are in proper positions and then plunging after them.

Note.—A very loud, harsh rattle, easily heard half a mile away on a clear, quiet day.

Nest.—At the end of a two or three-foot tunnel in a sand bank. The tunnel terminates in an enlarged chamber where the five to eight glossy white eggs (1.35 x 1.05) are laid upon the sand.

Range.—Whole of North America north to the Arctic regions. Winters from southern United States southward.

—*From Bird Guide*.

Living specimens may be seen at large near the Museum from June to September.

No. 279.—Belted Kingfisher. From Burrard Inlet, British Columbia, 1889. Received from the Geological Survey, Ottawa, 1895.

No. 280.—Belted Kingfisher. From Burrard Inlet, British Columbia, May 2, 1889. Received from the Geological Survey, Ottawa, 1895.

WOODPECKERS

NORTHERN HAIRY WOODPECKER, 393a. *Dryobates villosus leucomelas*.

ROCKY MOUNTAIN HAIRY WOODPECKER, 393e. *Dryobates villosus monticola*.

ARCTIC THREE-TOED WOODPECKER, 400. *Picoides arcticus*.

BACK glossy black, without any white. Only three toes, two in front and one behind. This is the most common of the two species found within the United States. They breed from the southern boundary of Canada north to the limit of trees. 9.5 inches.

No. 269.—Arctic Three-toed Woodpecker. From British Columbia, April 28, 1902. Received from the Geological Survey, Ottawa, 1895.

ALASKA THREE-TOED WOODPECKER, 401a. *Picoides americanus fasciatus*.

RED-NAPED SAPSUCKER, 402a. *Sphyrapicus varius nuchalis*.

No. 270.—Red-naped Sapsucker. From Revelstoke, British Columbia, April 28, 1890. Received from the Geological Survey, Ottawa, 1895.

NORTHERN PILEATED WOODPECKER, 405a. *Phlœotomus pileatus abieticola*.

No. 274.—Northern Pileated Woodpecker. From Midway, British Columbia, April 13, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 275.—Northern Pileated Woodpecker. From Field, British Columbia. Received from the Geological Survey, Ottawa, 1906.

No. 276.—Northern Pileated Woodpecker. From Bracebridge, Ontario, 1892. Received from the Geological Survey, Ottawa, 1907.

RED-HEADED WOODPECKER, 406. *Melanerpes erthrocephalus*. Casual.

LEWIS WOODPECKER, 408. *Asyndesmus lewisi*.

No. 277.—Lewis Woodpecker. May 10, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 278.—Lewis Woodpecker. From Park near Banff, Alberta. Purchased.

NORTHERN FLICKER, 412a. *Colaptes auratus luteus*.

No. 263.—Flicker. From Banff, Alberta, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 38.—Egg of Flicker. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

RED-SHAFTED FLICKER, 413. *Colaptes cafer collaris*.

Living specimens may be seen at large near the Museum in May and June.

No. 264.—Red-shafted Flicker. From Revelstoke, British Columbia, May 16, 1890. Received from the Geological Survey, Ottawa.

No. 265.—Red-shafted Flicker. May 17, 1904. Received from the Geological Survey, Ottawa, 1907.

GOATSUCKERS

WESTERN NIGHTHAWK, 420a. *Chordeiles virginianus henryi*.

No. 260.—Western Nighthawk. From British Columbia, 1885. Received from the Geological Survey, Ottawa.

No. 261.—Western Nighthawk. From Osoyoos Lake, British Columbia, June 6, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 262.—Western Nighthawk. From Similkameen, British Columbia, June 9, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 31.—Egg of Western Nighthawk. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

SWIFTS

CHIMNEY SWIFT, 423. *Chaetura pelagica*. Casual.

WHITE-THROATED SWIFT, 425. *Aëronautes melano-leucus*. Casual.

HUMMINGBIRDS

RUFIOUS HUMMINGBIRD, 433. *Selasphorus rufus*.

Living specimens may be seen at large near the Museum from June to August.

No. 257.—Rufous Hummingbird. From Vancouver Island, British Columbia, 1887. Received from the Geological Survey, Ottawa, 1895.

CALLIOPE HUMMINGBIRD, 436. *Stellula calliope*.

Living specimens may be seen near the Museum from June to August.

No. 258.—Calliope Hummingbird. From Deer Park, British Columbia, June 12, 1890. Received from the Geological Survey, Ottawa.

No. 74.—Nest of Hummingbird. Presented by the late Dr. W. White, Banff, Alberta.

FLYCATCHERS

KINGBIRD, 444. *Tyrannus tyrannus*.

ADULTS with a concealed orange crown patch; young with none. From the time of their arrival in May until they leave us in August, Kingbirds are much in evidence in farmyards and orchards. They are one of the most noisy birds, always quarreling about something, and usually coming off victorious in whatever they undertake. Crows are objects of hatred to them, and they always drive them from the neighborhood, vigorously dashing upon and picking them from above and often following them for a great distance. They have their favorite perches from which they watch for insects, usually a dead branch, a fence post, or a tall stalk in the field. $8\frac{1}{2}$ inches.

Note.—A series of shrill, harsh sounds like "thsee, thsee."

Nest.—Of sticks, rootlets, grass, string, etc., placed in orchard trees or open woods at any height. Four or five creamy white eggs, specked and spotted with reddish-brown (.95 x .70).

Range.—Breeds from the Gulf to southern Canada.

—*From Bird Guide*.

No. 240.—Kingbird. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa.

No. 241.—Kingbird. From Enderby, British Columbia, July 11, 1889. Received from the Geological Survey, Ottawa.

No. 41.—Egg of Kingbird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

ARKANSAS KINGBIRD, 447. *Tyrannus verticalis*.

No. 242.—Arkansas Kingbird. From Lower Arrow Lake, British Columbia, June, 1890. Received from the Geological Survey, Ottawa.

No. 243.—Arkansas Kingbird. From Medicine Hat, Alberta, May 25, 1894. Received from the Geological Survey, Ottawa.

No. 42.—Egg of Arkansas Kingbird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

PHŒBE, 456. *Sayornis phœbe*.SAY PHŒBE, 457. *Sayornis sayus*.

No. 244.—Phœbe. From Indian Head, Saskatchewan, May 12, 1892. Received from the Geological Survey, Ottawa, 1907.

No. 245.—Say Phœbe. From Midway, British Columbia, April 14, 1905. Received from the Geological Survey, Ottawa, 1907.

OLIVE-SIDED FLYCATCHER, 459. *Nuttallornis borealis*.

No. 246.—Olive-sided Flycatcher. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 247.—Olive-sided Flycatcher. Received from the Geological Survey, Ottawa, 1895.

WESTERN WOOD PEWEE, 462. *Myiochanes richardsoni richardsoni*.

Living specimens may be seen at large near the Museum in June and August.

No. 248.—Western Wood Pewee. From Banff, Alberta. Collected by N. B. Sanson, August 21, 1906.

No. 249.—Western Wood Pewee. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 250.—Western Wood Pewee. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

No. 50.—Egg of Western Wood Pewee. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

YELLOW-BELLIED FLYCATCHER, 463. *Empidonax flaviventris*.

ALDER FLYCATCHER, 466a. *Empidonax trailli alnorum*.

LEAST FLYCATCHER, 467. *Empidonax minimus*.

HAMMOND FLYCATCHER, 468. *Empidonax hammondi*.

No. 254.—Hammond Flycatcher. From Revelstoke, British Columbia, June 11, 1890. Received from the Geological Survey, Ottawa, 1895.

No. 255.—Hammond Flycatcher. May 12, 1890. Received from the Geological Survey, Ottawa, 1895.

WRIGHT FLYCATCHER, 469. *Empidonax wrighti*.

No. 51.—Egg of Flycatcher. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

LARKS

PALLID HORNED LARK, 474a. *Otocoris alpestris arctica*.

No. 239.—Pallid Horned Lark. From Indian Head, Saskatchewan, August 29, 1891. Received from the Geological Survey, Ottawa.

DESERT HORNED LARK, 474c. *Otocoris alpestris leucolæma*.

HOYT HORNED LARK, 474k. *Otocoris alpestris hoyti*.

MAGPIES

AMERICAN MAGPIE, 475. *Pica pica hudsonia*.

THIS handsome member of the Crow family is sure to attract the attention of all who may see him. He is very pert in all his actions, both in trees and on the ground, and is always ready for mischief. In a high wind their long tail often makes travelling a labourious operation for them, and at such times they usually remain quite quiet. They are very impudent and always on the lookout for something to steal; they are also very noisy and forever scolding and chattering among themselves. 20 inches.

Notes.—A loud, harsh “cack,” “cack,” and an endless variety of whistles and imitations.

Nest.—A large, globular heap of sticks placed in bushes or trees from four to fifty feet from the ground. The entrance to the nest is on one side and the interior is made of grass and mud. The four to six eggs are white, thickly specked with yellowish-brown (1.25 x .90).

Range.—Western North America, east to the Plains and north to Alaska; resident.—*From Bird Guide*.

No. 218.—American Magpie. From Foothills, Alberta. Collected by N. B. Sanson, 1904.

No. 219.—American Magpie. From Foothills, Alberta. Received from the Geological Survey, Ottawa, 1904.

No. 220.—American Magpie. From Spence Bridge, British Columbia, 1889. Received from the Geological Survey, Ottawa, 1895.

JAYS

BLUE JAY, 477. *Cyanocitta cristata cristata*.BLACK-HEADED JAY, 478c. *Cyanocitta stelleri annectens*.

No. 225.—Black-headed Jay. From Revelstoke, British Columbia, April 15 1890. Received from the Geological Survey, Ottawa, 1907.

CANADA JAY, 484. *Perisoreus canadensis canadensis*.

Living specimens may be seen at large near the Museum, but mostly during spring, summer, and fall.

No. 226.—Canada Jay. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 227.—Canada Jay. From Banff, Alberta, May, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 228.—Canada Jay. From Indian Head, Saskatchewan, 1890. Received from the Geological Survey, Ottawa, 1895.

ROCKY MOUNTAIN JAY, 484a. *Perisoreus canadensis capitalis*.

No. 229.—Rocky Mountain Jay. From Griffin Lake, British Columbia, August, 1889. Received from the Geological Survey, Ottawa, 1895.

No. 230.—Rocky Mountain Jay. From 6,000 feet altitude, Griffin Lake, British Columbia, August 8, 1889. Received from the Geological Survey, Ottawa, 1907.

NORTHERN RAVEN, 486a. *Corvus corax principalis*.

WESTERN CROW, 488b. *Corvus brachyrhynchos hesperis*.

CLARK NUTCRACKER, 491. *Nucifraga columbiana*.

Living specimens may be seen at large near the Museum, but mostly during spring, summer, and fall.

Nos. 233, 234.—Clark Nutcracker. From Kicking Horse Pass, Alberta 1885. Received from the Geological Survey, Ottawa, 1895.

No. 29.—Egg of Crow. From Alberta, Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BLACKBIRDS

BOBOLINK, 494. *Dolichonyx oryzivorus*.

BOBOLINKS are to be found in rich grass meadows from whence their sweet, wild music is often borne to us by the breeze. While his mate is feeding in the grass or attending to their domestic affairs, Mr. Bobolink is usually to be found perched on the tip of a tree, weed stalk, or even on a tall blade of grass, if no other spot of vantage is available, singing while he stands guard to see that no enemies approach. He is a good watchman and it is a difficult matter to flush his mate from the nest, for she leaves at his first warning. $7\frac{1}{4}$ inches.

Song.—A wild, sweet, rippling repetition of his name with many additional trills and notes. Alarm note a harsh "chah" like that of the Blackbird.

Nest.—Of grasses in a hollow on the ground, in meadows. They lay four to six eggs with a white ground colour, heavily spotted, clouded, and blotched with brown (.85 x .62).

Range.—N. A. east of the Rockies, breeding from New Jersey and Kansas north to Manitoba and New Brunswick; winters in South America.—*From Bird Guide*.

No. 201.—Bobolink. From Cypress Hills, Alberta, June 24, 1894. Received from the Geological Survey, Ottawa, 1907.

No. 202.—Bobolink. From Indian Head, Saskatchewan, September 7, 1891. Received from the Geological Survey, Ottawa, 1907.

COWBIRD, 495. *Molothrus ater ater.*

- No. 199.—Cowbird. From Revelstoke, British Columbia, May 26, 1890, Received from the Geological Survey, Ottawa, 1907.
 No. 200.—Cowbird. From Revelstoke, British Columbia, May 26, 1890. Received from the Geological Survey, Ottawa, 1895.
 No. 45.—Egg of Cowbird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

YELLOW-HEADED BLACKBIRD, 497. *Xanthocephalus xanthocephalus.*

- No. 203.—Yellow-headed Blackbird. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 204.—Yellow-headed Blackbird. From Indian Head, Saskatchewan, 1890. Received from the Geological Survey, Ottawa, 1895.
 No. 36.—Egg of Yellow-headed Blackbird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

THICK-BILLED RED-WING, 498d. *Agelaius phoeniceus fortis.*

WESTERN MEADOWLARK, 501.1 *Sturnella neglecta.*

- No. 214.—Western Meadowlark. From Indian Head, Saskatchewan, May 16, 1889. Received from the Geological Survey, Ottawa, 1895.
 No. 215.—Western Meadowlark. From Agassiz, British Columbia, May 9, 1889. Received from the Geological Survey, Ottawa, 1895.
 No. 216.—Western Meadowlark. From Agassiz, British Columbia, May 17, 1889. Received from the Geological Survey, Ottawa, 1895.
 No. 217.—Western Meadowlark. From Indian Head, Saskatchewan, September 16, 1891. Received from the Geological Survey, Ottawa, 1895.

BALTIMORE ORIOLE, 507. *Icterus galbula.*

- No. 208.—Baltimore Oriole. From Indian Head, Saskatchewan, June 9, 1892. Received from the Geological Survey, Ottawa, 1895.

BULLOCK ORIOLE, 508. *Icterus bullocki.*

- Nos. 209, 210.—Bullock Oriole. From Osoyoos Lake, British Columbia, May 30, 1905. Received from the Geological Survey, Ottawa, 1907.

RUSTY BLACKBIRD, 509. *Euphagus carolinus.*

- No. 207.—Rusty Blackbird. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.

BREWER BLACKBIRD, 510. *Euphagus cyanocephalus.*

No. 205.—Brewer Blackbird. From Indian Head, Saskatchewan, September 10, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 206.—Brewer Blackbird. May 15, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 34.—Egg of Brewer Blackbird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BRONZED GRACKLE, 511b. *Quiscalus quiscula æneus.*

FINCHES SPARROWS AND BUNTINGS

EVENING GROSBEAK, 514. *Hesperiphona vespertina vespertina.*

FEMALE paler and with white on upper tail coverts. As would be judged from the large bills that these birds have, their food consists almost entirely of seeds, with occasionally a few berries and perhaps insects. In certain localities they are not uncommon, but, except in winter, they are rare anywhere in the U. S., and east of the Mississippi they can only be regarded as accidental even in winter. They have been taken several times in Massachusetts. In winter they usually travel about in small bands, visiting localities where the food supply is the most abundant. 8 inches.

Song.—A clear Robin-like whistle; call, a short whistle.

Nest.—A flat structure of twigs and rootlets placed at low elevations in trees or bushes. Four eggs, greenish-white, spotted with brown (.90 x .65).

Range.—Breeds in mountains of western British America and northwestern U. S. south and east in winter to the Mississippi and rarely farther.—*From Bird Guide.*

No. 122.—Evening Grosbeak. Received from the Geological Survey, Ottawa, 1895.

PINE GROSBEAK, 515. *Pinicola enucleator leucura.*

Living specimens may be seen at large near the Museum in mild winter weather and in spring.

No. 196.—Pine Grosbeak. From Revelstoke, British Columbia, April 23, 1890. Received from the Geological Survey, Ottawa, 1907.

PURPLE FINCH, 517. *Carpodacus purpureus purpureus.*
Straggler.

Nos. 123, 124.—Purple Finch. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

CASSIN PURPLE FINCH, 518. *Carpodacus cassinii*. Straggler.

CROSSBILL, 521. *Loxia curvirostra minor*.

Nos. 128, 129.—American Crossbill. From Midway, British Columbia. Received from the Geological Survey, Ottawa, 1907.

WHITE-WINGED CROSSBILL, 522. *Loxia leucoptera*.

GREY-CROWNED ROSY FINCH, 524. *Leucosticte tephrocotis tephrocotis*.

No. 130.—Grey-crowned Rosy Finch. From Midway, British Columbia. Received from the Geological Survey, Ottawa, 1907.

HOARY REDPOLL, 527a. *Acanthis hornemanni exilipes*.

REDPOLL, 528. *Acanthis linaria linaria*.

Living specimens may be seen at large near the Museum in spring and fall.

No. 131.—Redpoll. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 132.—Redpoll. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 133.—Redpoll. From Medicine Hat, Alberta. Received from the Geological Survey, Ottawa, 1907.

PALE GOLDFINCH, 529a. *Astragalinus tristis pallidus*.

PINE SISKIN, 533. *Spinus pinus*.

No. 144.—Pine Siskin. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 145.—Pine Siskin. From Midway, British Columbia. Received from the Geological Survey, Ottawa, 1897.

No. 146.—Pine Siskin. From Huntington, British Columbia. Received from the Geological Survey, Ottawa, 1897.

SNOW BUNTING, 534. *Plectrophenax nivalis nivalis*.

Living specimens may be seen at large near the Museum from November to March.

No. 135.—Snow Bunting. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 136.—Snow Bunting. From Banff, Alberta. Collected by Mr. N. B. Sanson, Banff, Alberta, March 16, 1909.

No. 137.—Snow Bunting. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

LAPLAND LONGSPUR, 536. *Calcarius lapponicus lapponicus*.

No. 138.—Lapland Longspur. From Matthew Island. Received from the Geological Survey, Ottawa, 1895.

Nos. 139, 140.—Lapland Longspur. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

CHESTNUT-COLLARED LONGSPUR, 538. *Calcarius ornatus*.

No. 143.—Chestnut-collared Longspur. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

McCOWN LONGSPUR, 539. *Rhynchophanes mccowni*.

No. 141.—McCown Longspur. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 142.—McCown Longspur. From Rush Lake, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

WESTERN VESPER SPARROW, 540a. *Poœcetes gramineus confinis*.

No. 149.—Western Vesper Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 150.—Western Vesper Sparrow. 1904. Received from the Geological Survey, Ottawa, 1907.

No. 47.—Egg of Western Vesper Sparrow. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

WESTERN SAVANNAH SPARROW, 542b. *Passerculus sandwichensis alaudinus*.

No. 147.—Western Savannah Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

BAIRD SPARROW, 545. *Ammodramus bairdi*.

LECONTE SPARROW, 548. *Passerherbulus lecontei*.

NELSON SPARROW, 549.1 *Passserherbulus nelsoni nelsoni*.

HARRIS SPARROW, 553. *Zonotrichia querula*.

WHITE-CROWNED SPARROW, 554. *Zonotrichia leucophrys leucophrys*.

Living specimens may be seen at large near the Museum from May to August.

No. 157.—White-crowned Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 158.—White-crowned Sparrow. From Banff, Alberta. Received from the Geological Survey, Ottawa, May, 1909.

GAMBEL SPARROW, 554a. *Zonotrichia leucophrys gambeli*.

GOLDEN-CROWNED SPARROW, 557. *Zonotrichia coronata*.

Nos. 154, 155.—Golden-crowned Sparrow. From Victoria, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 156.—Golden-crowned Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

WHITE-THROATED SPARROW, 558. *Zonotrichia albicollis*.

No. 153.—White-throated Sparrow. From near Ottawa. Received from the Geological Survey, Ottawa, 1895.

TREE SPARROW, 559. *Spizella monticola monticola*.

WESTERN TREE SPARROW, 559a. *Spizella monticola ochracea*.

No. 188.—Tree Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 186.—Western Tree Sparrow. From Medicine Hat, Alberta, 1894. Received from the Geological Survey, Ottawa, 1907.

No. 187.—Western Tree Sparrow. From Revelstoke, British Columbia, 1890. Received from the Geological Survey, Ottawa, 1895.

WESTERN CHIPPING SPARROW, 560a. *Spizella passerina arizonae*.

Living specimens may be seen at large near the Museum from May to August.

No. 162.—Western Chipping Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 163.—Western Chipping Sparrow. From Banff, Alberta, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 164.—Western Chipping Sparrow. From Banff, Alberta, June 8, 1891. Received from the Geological Survey, Ottawa, 1895.

No. 165.—Western Chipping Sparrow. From Spence Bridge, British Columbia, May 14, 1904. Received from the Geological Survey, Ottawa, 1907.

No. 166.—Western Chipping Sparrow. Juvenile. From Banff, Alberta. Collected by N. B. Sanson, July 26, 1906.

CLAY-COLORED SPARROW, 561. *Spizella pallida*.

No. 160.—Clay-colored Sparrow. From Old Wive's Creek, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

No. 161.—Clay-colored Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 57.—Egg of Clay-colored Sparrow. From Alberta. Presented by Dr H. M. George, Innisfail, Alberta, 1897.

BREWER SPARROW, 562. *Spizella breweri*.

SLATE-COLORED JUNCO, 567. *Junco hyemalis hyemalis*.

- No. 167.—Slate-colored Junco. From Medicine Hat, Alberta, April 12, 1904. Received from the Geological Survey, Ottawa, 1907.
 No. 168.—Slate-colored Junco. From Indian Head, Saskatchewan, September 24, 1891. Received from the Geological Survey, Ottawa, 1895.
 No. 169.—Slate-colored Junco. From Indian Head, Saskatchewan, 1890. Received from the Geological Survey, Ottawa, 1895.

SHUFELDT JUNCO, 567b. *Junco hyemalis connectens*.

- No. 170.—Shufeldt Junco. From Revelstoke, British Columbia, May 12, 1890. Received from the Geological Survey, Ottawa, 1895.
 No. 173.—Shufeldt Junco. From Revelstoke, British Columbia, April 15, 1890. Received from the Geological Survey, Ottawa, 1895.
 No. 174.—Shufeldt Junco. From Canmore, Alberta, May 29, 1891. Received from the Geological Survey, Ottawa, 1907.
 No. 175.—Shufeldt Junco. From British Columbia, June 5, 1892. Received from the Geological Survey, Ottawa, 1907.

MONTANA JUNCO, 567f. *Junco hyemalis montanus*.

SONG SPARROW, 581. *Melospiza melodia melodia*.

- No. 176.—Song Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.
 No. 177.—Song Sparrow. From Banff, Alberta, June 1, 1891. Received from the Geological Survey, Ottawa, 1907.

RUSTY SONG SPARROW, 581e. *Melospiza melodia morphna*.

- No. 178.—Rusty Song Sparrow. From Victoria, British Columbia, April 22, 1887. Received from the Geological Survey, Ottawa, 1895.
 No. 179.—Rusty Song Sparrow. From Victoria, British Columbia, May 20, 1893. Received from the Geological Survey, Ottawa, 1895.
 No. 180.—Rusty Song Sparrow. From Indian Head, Saskatchewan, 1892. Received from the Geological Survey, Ottawa, 1895.
 No. 181.—Rusty Song Sparrow. From Revelstoke, British Columbia, April 14, 1890. Received from the Geological Survey, Ottawa, 1907.

SOOTY SONG SPARROW, 581f. *Melospiza melodia rufina*.

- No. 182.—Sooty Song Sparrow. From Huntington, September 27, 1901. Received from the Geological Survey, Ottawa, 1907.

LINCOLN SPARROW, 583. *Melospiza lincolni lincolni*.

- No. 183.—Lincoln Sparrow. From Edmonton, Alberta, May 11, 1897. Received from the Geological Survey, Ottawa, 1907.
 No. 184.—Lincoln Sparrow. From Edmonton, Alberta, June 1, 1897. Received from the Geological Survey, Ottawa, 1895.

SWAMP SPARROW, 584. *Melospiza georgiana*.

- No. 185.—Swamp Sparrow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.
 No. 48.—Egg of Swamp Sparrow. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

FOX SPARROW, 585. *Passerella iliaca iliaca*.

SLATE-COLORED FOX SPARROW, 585c. *Passerella iliaca schistacea*.

SPURRED TOWHEE, 588a. *Pipilo maculatus montanus*.

No. 191.—Spurred Towhee. From Osoyoos Lake, British Columbia, June 5, 1905. Received from the Geological Survey, Ottawa, 1907.

No. 192.—Spurred Towhee. May 4, 1904. Received from the Geological Survey, Ottawa, 1907.

BLACK-HEADED GROSBEAK, 596. *Zamelodia melanocephala*.

LAZULI BUNTING, 599. *Passerina amœna*.

No. 134.—Lazuli Bunting. From Asoy. Received from the Geological Survey, Ottawa, 1907.

LARK BUNTING, 605. *Calamospiza melanocorys*.

TANAGERS

WESTERN TANAGER, 607. *Piranga ludoviciana*.

No. 120.—Western Tanager. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

SWALLOWS

PURPLE MARTIN, 611. *Progne, subis subis*.

MALE, blue black; female, dull black and greyish.

These large, jolly Swallows are commonly seen about cities and towns within their range. Originally they dwelt in hollow trees, and some do yet, but the majority have recognized the superiority of man's dwelling and now live in houses built especially for them or in cornices of houses or barns. It is no uncommon sight to see a handsome gabled structure of many rooms, perched upon a twelve-foot pole, on the lawns of many wealthy residents; others less bountifully supplied with this world's goods use plain soap boxes for the same purpose, and the Martins seem to like the one as well as the other. $7\frac{3}{4}$ ins.

Song.—A strong, varied grating warble or twitter, more forcible than melodious.

Nest.—Of straw, paper, rags, etc., in bird houses, gables, or hollow trees; eggs dull white (.98 x .72).

Range.—N. A., breeding from the Gulf to New Brunswick and Saskatchewan; winters in northern South America.

—*From Bird Guide*.

No. 108.—Purple Martin. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

CLIFF SWALLOW, 612. *Petrochelidon lunifrons lunifrons*.

Living specimens may be seen at large near the Museum from June to July.

No. 109. Cliff Swallow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 110.—Cliff Swallow. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 52.—Egg of Cliff Swallow. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BARN SWALLOW, 613. *Hirundo erythrogastra*.

No. 53.—Egg of Barn Swallow. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

TREE SWALLOW, 614. *Iridoprogne bicolor*.

No. 111.—Tree Swallow. From Canmore, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 112.—Tree Swallow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 113.—Tree Swallow. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 54.—Egg of Tree Swallow. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

NORTHERN VIOLET-GREEN SWALLOW, 615. *Tachycineta thalassina lepida*.

Living specimens may be seen at large near the Museum from June to July.

No. 114.—Northern Violet-green Swallow. From Canmore, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 115.—Northern Violet-green Swallow. From Sproat, Columbia River, British Columbia. Received from the Geological Survey, Ottawa, 1895.

BANK SWALLOW, 616. *Riparia riparia*.

No. 116.—Bank Swallow. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

ROUGH-WINGED SWALLOW, 617. *Stelgidopteryx serripennis*.

No. 117.—Rough-winged Swallow. From Victoria, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 118.—Rough-winged Swallow. From Comox, British Columbia. Received from the Geological Survey, Ottawa, 1895.

WAXWINGS

BOHEMIAN WAXWING, 618. *Bombycilla garrula*.

Living specimens may be seen at large near the Museum in spring, fall, and winter.

No. 107.—Bohemian Waxwing. From Canmore, Alberta. Received from the Geological Survey, Ottawa, 1895.

CEDAR WAXWING, CHERRY BIRD, 619. *Bombycilla cedrorum*.

PLUMAGE very soft colored with a general brownish tone, shading to gray on the rump. The Waxwings are named from the curious wax-like appendages attached to the tips of the secondaries, and rarely to the tail feathers. They are very sociable and usually feed in flocks. They live chiefly upon fruit, and are especially fond of cherries, for which reason they are very often known as Cherry-birds. They are very tame and allow anyone to almost touch them while they are feeding or sitting upon their nests. 7 inches.

Note.—An insignificant lisping hiss.

Nest.—A substantial structure of twigs, mosses, twine, etc., lined with fine grasses; placed in cedar trees or, when near habitations, usually in orchard trees; the four or five eggs are dull bluish white, specked with black (.85 x .60).

Range.—N. A., breeding from Virginia, Missouri, and northern California north to Labrador and southern Alaska; winters throughout the United States.—*From Bird Guide*.

Nos. 105, 106.—Cedar Waxwing. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 46.—Egg of Cedar Waxwing. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

No. 73.—Egg of Cedar Waxwing. From Minnewanka, Alberta. Collected by N. B. Sanson, Banff, Alberta.

SHRIKES

NORTHERN SHRIKE, 621. *Lanius borealis*.

THIS shrike is larger than any of the species found in summer in the United States and has the breast quite distinctly barred. 10 inches.

Shrikes are cruel, rapacious, and carnivorous birds, feeding upon insects, grasshoppers, lizards, and small birds. As they have passerine feet, the same as all our small birds, they are unable to hold their prey between the feet while tearing it to pieces, so they impale it upon thorns or the barbs of a wire fence, so they may tear it to shreds with their hooked bill.

Song.—Loud snatches consisting of various whistles and imitations suggesting that of a Catbird.

Nest.—They breed chiefly north of the U. S., placing their rude, bulky structures of twigs and weeds in thorny trees or hedges; their four to six eggs are greyish-white with spots of light brown and darker gray (1.08 x .80).

Range.—N. A., breeding chiefly in the northern parts of Canada; winters south to Pennsylvania, Kansas, and California.
—*From Bird Guide*.

No. 101.—Northern Shrike. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 102.—Northern Shrike. From Vancouver Island, British Columbia. Received from the Geological Survey, Ottawa, 1895.

WHITE-RUMPED SHRIKE, 622a. *Lanius ludovicianus excubitorides*.

No. 103.—White-rumped Shrike. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 40.—Egg of White-rumped Shrike. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

VIREOS

RED-EYED VIREO, 624. *Vireosylva olivacea*.

CROWN slaty grey with a black border; white stripe above eye; eye red. 6 inches.

Throughout the United States this is one of the most abundant of the family. All through the spring and summer months their warble is heard from woodland and roadside, often becoming so monotonous as to be irritating. Oftentimes during the spring migrations of Warblers, Vireos are so numerous and singing so lustily that it is impossible to hear or distinguish the songs of any of the smaller birds.

Song.—Delivered in parts with intermission of a few seconds between, from morning until night; a short varied warble; call, a petulant mew.

Nest.—A basket woven of strips of bark and fibres, and

often with pieces of newspaper worked in, lined with fine grass; eggs white with a few blackish-brown specks on the large end (.85 x .55).

Range.—U. S. east of the Rockies, breeding from the Gulf to Labrador and Manitoba; winters in Central America.
—*From Bird Guide*.

No. 88.—Red-eyed Vireo. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 89.—Red-eyed Vireo. From Similkameen, British Columbia. Received from the Geological Survey, Ottawa, 1907.

No. 90.—Red-eyed Vireo. From Medicine Hat, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

No. 91.—Red-eyed Vireo. From Old Wive's Creek, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

PHILADELPHIA VIREO, 626. *Vireosylva philadelphica*.

WESTERN WARBLING VIREO, 627a. *Vireosylva gilva swainsoni*.

No. 94.—Western Warbling Vireo. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1907.

No. 97.—Western Warbling Vireo. From Agassiz, British Columbia. Received from the Geological Survey, Ottawa, 1895.

CASSIN VIREO, 629a. *Lanivireo solitarius cassinii*.

No. 95.—Cassin Vireo. Received from the Geological Survey, Ottawa, 1907.

No. 96.—Cassin Vireo. From Vancouver Island, British Columbia. Received from the Geological Survey, Ottawa, 1895.

Nos. 98, 99.—Cassin Vireo. 1905. Received from the Geological Survey, Ottawa, 1907.

No. 100.—Cassin Vireo. From Vancouver Island, British Columbia. Received from the Geological Survey, Ottawa, 1895.

WARBLERS

NASHVILLE WARBLER, 645. *Vermivora rubricapilla rubricapilla*.

ORANGE-CROWNED WARBLER, 646. *Vermivora celata celata*.

Nos. 79, 80.—Orange-crowned Warbler. From Medicine Hat, Alberta. Received from the Geological Survey, Ottawa, 1907.

TENNESSEE WARBLER, 647. *Vermivora peregrina*.

No. 56.—Tennessee Warbler. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 57.—Tennessee Warbler. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

YELLOW WARBLER, 652. *Dendroica æstiva æstiva*.

MYRTLE WARBLER, 655. *Dendroica coronata*.

AUDUBON WARBLER, 656. *Dendroica auduboni auduboni*.

No. 58.—Audubon Warbler. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

Nos. 59, 60, 61.—Audubon Warbler. From British Columbia. Received from the Geological Survey, Ottawa, 1895.

MAGNOLIA WARBLER, 657. *Dendroica magnolia*.

BLACK-POLL WARBLER, 661. *Dendroica striata*.

No. 66.—Black-poll Warbler. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

BLACK-THROATED GREEN WARBLER, 667. *Dendroica virens*.

TOWNSEND WARBLER, 668. *Dendroica townsendi*.

No. 62.—Townsend Warbler. From Victoria, British Columbia. Received from the Geological Survey, Ottawa, 1907.

OVEN-BIRD, 674. *Seiurus aurocapillus*.

GRINNELL WATER-THRUSH, 675a *Seiurus noveboracensis notabilis*.

Nos. 68, 69.—Grinnell Water-thrush. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

MACGILLIVRAY WARBLER, 680. *Oporornis tolmiei*.

No. 70.—Macgillivray Warbler. From British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 71.—Macgillivray Warbler. From Vancouver, British Columbia. Received from the Geological Survey, Ottawa, 1895.

WESTERN YELLOW-THROAT, 681a. *Geothlypis trichas occidentalis*.

No. 74.—Western Yellow-throat. From Osoyoos Lake, British Columbia. Received from the Geological Survey, Ottawa, 1907.

No. 75.—Western Yellow-throat. From British Columbia. Received from the Geological Survey, Ottawa, 1895.

WILSON WARBLER, 685. *Wilsonia pusilla pusilla*.

No. 84.—Wilson Warbler. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

PILEOLATED WARBLER, 685a. *Wilsonia pusilla pileolata*.

- No. 81.—Pileolated Warbler. 1905. Received from the Geological Survey, Ottawa, 1907.
 No. 82.—Pileolated Warbler. From Victoria, British Columbia. Received from the Geological Survey, Ottawa, 1895.
 No. 83.—Pileolated Warbler. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1907.

CANADA WARBLER, 686. *Wilsonia canadensis*.

- No. 85.—Canada Warbler. Received from the Geological Survey, Ottawa, 1907.

REDSTART, 687. *Setophaga ruticilla*.

- No. 86.—Redstart. From Kamloops, British Columbia. Received from the Geological Survey, Ottawa, 1895.
 No. 87.—Redstart. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

WAGTAILS

WAGTAILS, PIPITS.

AMERICAN PIPIT; TITLARK, 697. *Anthus rubescens*.

THESE are Arctic birds that spend the winter months in the United States. We find them in flocks along roadsides or in fields, feeding upon weed seeds. They are shy and take wing readily, uttering sharp whistles as they wheel about in the air. They are always restless and stay in a place but a short time. They nest on the ground in northern Canada. Eggs grayish, profusely specked with brown. $6\frac{1}{2}$ inches.

—*From Bird Guide.*

- No. 51.—American Pipit. From Canmore, Alberta. Received from the Geological Survey, Ottawa, 1895.
 No. 52.—American Pipit. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.
 No. 421.—American Pipit. Male. From Banff, Alberta, May 14, 1911. Collected by N. B. Sanson.

SPRAGUE PIPIT, 700. *Anthus spraguei*. Casual.

DIPPERS

DIPPER, 701. *Cinclus mexicanus unicolor*.

Living specimens may be seen at large near the Museum at open water in Bow River and Spray River.

- No. 00.—Dipper. From North Arm, British Columbia. Received from the Geological Survey, Ottawa, 1907.

THRASHERS AND MOCKING BIRDS

CATBIRD, 704. *Dumetella carolinensis*.

GENERAL colour dark grey with a black cap and chestnut under tail coverts. 9 inches.

This is one of the most common birds throughout the United States, being found equally abundantly in gardens, swamps, and scrubby pastures. They are very persistent songsters and have a large repertoire of notes, as well as being able to imitate those of many other birds. They delight in spending an hour or more at a time, perched in a bush or tree top, singing, and apparently making their song up as they go along, for it is an indescribable medley interspersed with various mews and cat calls.

Song.—A medley like that of the Mockingbird; sometimes pleasing, sometimes not.

Nest.—In hedges or thickets; made of twigs, rootlets, and grass, lined with fine black roots; the four eggs are plain greenish-blue (.95 x .70).

Range.—N. A., breeding from the Gulf to New Brunswick and Hudson Bay; rare west of the Rockies; winters from the Gulf States southward.—*From Bird Guide*.

No. 000.—Catbird. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 000.—Catbird. 1905. Received from the Geological Survey, Ottawa, 1907.

No. 43.—Egg of Catbird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

BROWN THRASHER, 705. *Toxostoma rufum*. Casual.

WRENS

ROCK WREN, 715. *Salpinctes obsoletus obsoletus*.

UPPER parts stone colour, specked with black; rump brownish, underparts whitish with indistinct streaks on the throat. 5¾ inches.

A common bird on the dry, rocky foothills of the Rockies and westward. They are well named, for their favorite places are among the rocks, where they are always busily engaged in hunting insects or spiders in the crevices. Owing to their colours and their habits of slinking away behind the rocks they are quite difficult to see, but their sweet song is always heard if any of the birds are in the vicinity.

Song.—Very sweet and varied, almost canary-like, but impossible to describe; call, a harsh grating note.

Nest.—Of sticks, weeds, grasses, etc., concealed in crevices among the rocks; the five or six eggs are white, sparingly specked with reddish-brown (.72 x .54).—*From Bird Guide*.

Range.—Western U. S. from the western border of the Plains to the Pacific, north to Dakota and British Columbia; winters from southwestern U. S. southward.—*From Bird Guide*.

No. 40.—Rock Wren. From Spence Bridge. Received from the Geological Survey, Ottawa, 1895.

No. 41.—Rock Wren. Received from the Geological Survey, Ottawa, 1907.

WESTERN HOUSE WREN, 721a. *Troglodytes aëdon parkmani*.

No. 45.—Western House Wren. From Vancouver, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 46.—Western House Wren. From Agassiz, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 50.—Western House Wren. From Medicine Hat, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

No. 60.—Egg of Western House Wren. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

WINTER WREN, 722. *Nannus hiemalis hiemalis*.

WESTERN WINTER WREN, 722a. *Nannus hiemalis pacificus*.

No. 48.—Western Winter Wren. From Vancouver Island, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 49.—Western Winter Wren. From Burrard Inlet, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 59.—Western Winter Wren. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

PRAIRIE MARSH WREN, 725d. *Telmatodytes iliacus*.

CREEPERS

ROCKY MOUNTAIN CREEPER, 726b. *Certhia familiaris montana*.

NUTHATCHES

ROCKY MOUNTAIN NUTHATCH, 727c. *Sitta carolinensis nelsoni*.

No. 35.—Rocky Mountain Nuthatch. 1905. Received from the Geological Survey, Ottawa, 1907.

No. 00.—Rocky Mountain Nuthatch. From British Columbia, 1905. Received from the Geological Survey, Ottawa, 1907.

RED-BREASTED NUTHATCH, 728. *Sitta canadensis*.

THESE birds have the same habits as the larger Nuthatch, but are often found in flocks, while the White-breasted are usually in pairs and in the fall accompanied by their young. In the winter we usually find them in coniferous trees, where we can locate them by their nasal calls or by the shower of bark that they pry from the tree in their quest for grubs. $4\frac{1}{2}$ inches.

Song.—A nasal "yank-yank," like that of the white-breasted nuthatch, but not so loud, and usually repeated more times.

Nest.—In hollow stumps and limbs, the area about the opening nearly always being coated with fir balsam, for what purpose is not known; the cavity is lined with grasses and feathers; they lay from four to seven white eggs, which are very thickly spotted with reddish-brown (.60 x .50).

Range.—N. A., breeding from the northern parts of the northern tier of States, northward; winters south nearly to the Gulf and southern California.—*From Bird Guide*.

- No. 37.—Red-breasted Nuthatch. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.
- No. 38.—Red-breasted Nuthatch. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1895.
- No. 38x.—Red-breasted Nuthatch. From Banff, Alberta. Collected by N. B. Sanson.
- No. 39.—Nuthatch. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1907.

CHICKADEES

CHICKADEE, TITMOUSE.

LONG-TAILED CHICKADEE, 735a. *Penthestes atricapillus septentrionalis*.

Living specimens may be seen at large near the Museum in fall, winter, and spring.

- No. 00.—Long-tailed Chickadee. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1907.
- No. 30.—Long-tailed Chickadee. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1907.

MOUNTAIN CHICKADEE, 738. *Penthestes gambeli gambeli*.

Living specimens may be seen at large near the Museum and on Sulphur Mountain in fall, winter, and spring.

- No. 31.—Mountain Chickadee. From Midway, British Columbia. Received from the Geological Survey, Ottawa, 1907.
- No. 32.—Mountain Chickadee. Received from the Geological Survey, Ottawa, 1907.

HUDSONIAN CHICKADEE, 740. *Penthestes hudsonicus hudsonicus*.

No. 61.—Egg of Chickadee. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

KINGLETS

GOLDEN-CROWNED KINGLET, 748. *Regulus satrapa satrapa*.

No. 00.—Golden-crowned Kinglet. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

RUBY-CROWNED KINGLET, 749. *Regulus calendula calendula*.

MALE with a concealed patch of red on the crown; female with no red. $4\frac{1}{4}$ inches.

Like the Golden-crowned Kinglet, these are chiefly winter visitants in the United States and they do not remain there in the coldest weather, but pass on to the southern half of that country. They are nearly always met with in pine or other coniferous trees, being very abundant in spring in open pine woods and parks.

Song.—A clear warble, surprisingly loud and varied for so small a bird; call, a grating chatter.

Nest.—A ball of moss, grass, and feathers, deeply cupped, like that of the Golden-crowned Kinglet; partially suspended among the small twigs in the tops of coniferous trees; eggs white, more sparingly marked than those of the Golden-crowned Kinglet. (.55 x .43).

Range.—N. A., breeding northward from the southern boundary of Canada, and farther south in mountains; winters in the southern half of the United States.—*From Bird Guide*.

Living specimens may be seen at large near the Museum from May to September.

No. 00.—Ruby-crowned Kinglet. From Midway, British Columbia. Received from the Geological Survey, Ottawa, 1907.

No. 00.—Ruby-crowned Kinglet. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 00.—Ruby-crowned Kinglet. From Banff, Alberta. Collected by N. B. Sanson, May 20, 1908.

THRUSHES, SOLITAIRES AND BLUEBIRDS

SOLITAIRES.

TOWNSEND SOLITAIRE, 754. *Myadestes townsendi*.

Living specimens may be seen at large near the Museum from June to September.

No. 00.—Townsend Solitaire. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 00.—Townsend Solitaire. From Midway, British Columbia. Received from the Geological Survey, Ottawa, 1907.

No. 62.—Egg of Townsend Solitaire. From Banff, Alberta. Collected by N. B. Sanson.

No. 70.—Nest and four eggs of Townsend Solitaire. Collected by N. B. Sanson.

THRUSHES.

WILLOW THRUSH, 756a. *Hyloichla fuscescens salicicola*.

OLIVE-BACKED THRUSH, 758a. *Hylocichla ustulata swainsoni*.

Living specimens may be seen at large near the Museum from May to August.

No. 000,000.—Olive-backed Thrush. From Banff, Alberta. Received from the Geological Survey, Ottawa, 1895.

No. 000.—Olive-backed Thrush. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

No. 000.—Olive-backed Thrush. From Banff, Alberta. Received from N. B. Sanson.

HERMIT THRUSH, 759b. *Hylocichla guttata pallasi*.

No. 000.—Hermit Thrush. From Medicine Hat, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

SIERRA HERMIT THRUSH, 759e. *Hylocichla guttata sequoiensis*.

AMERICAN ROBIN, 761. *Planesticus migratorius migratroides*.

MALE with a black head and bright reddish-brown breast; female with a gray head and much paler breast; young intermediate between the two and with a reddish-brown breast spotted with black. 10 inches.

These well-known birds are very abundant in the southern part of Canada, being found most commonly about farms and dwellings in the country, and also in cities if they are not persecuted too severely by English Sparrows.

Song.—A loud cheery carol, "cheerily-cheerup, cheerily-cheerup," often long continued.

Nest.—A coarse but substantial structure of mud and grass, placed on horizontal boughs or in forks at any height, or in any odd place about dwellings; the four or five eggs are bluish-green (1.15 x .80).

Range.—Eastern N. A., breeding from the middle of the U. S. northward; winters throughout the U. S. Southern Robin, 761b. (*P. achrustera*) is a paler form found in the Carolinas and Georgia.—*From Bird Guide*.

No. 000.—American Robin. From Indian Head, Saskatchewan. Received from the Geological Survey, Ottawa, 1895.

WESTERN ROBIN, 761a. *Planesticus migratorius propinquus*.

Living specimens may be seen at large near the Museum from April to August.

Nos. 000, 000.—Western Robin. From Revelstoke, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 000.—Western Robin. From Banff, Alberta. Received from N. B. Sanson, June 19, 1906.

No. 37.—Egg of Western Robin. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

No. 63.—Egg of Western Robin. From Banff, Alberta. Collected by N. B. Sanson.

Nos. 71, 72.—Nests of Robins. From Banff, Alberta. Collected by N. B. Sanson.

NORTHERN VARIED THRUSH, 763a. *Ixoreus naevius meruloides*.

MOUNTAIN BLUEBIRD, 768. *Sialia currucoides*.

Living specimens may be seen at large near the Museum from April to August.

No. 000.—Mountain Bluebird. From Spence Bridge, British Columbia. Received from the Geological Survey, Ottawa, 1895.

No. 000.—Mountain Bluebird. From Medicine Hat, Saskatchewan. Received from the Geological Survey, Ottawa, 1907.

No. 56.—Egg of Mountain Bluebird. From Alberta. Presented by Dr. H. M. George, Innisfail, Alberta, 1897.

No. 424.—Mountain Bluebird. From Banff, Alberta, May 8, 1912. Collected by N. B. Sanson.

4. Fish of the Rocky Mountains Park

FISH

FISH are that class of cold blooded animals having back bones, that live only in water and breathe, that is whose red blood is aerated, by means of gills. Usually they have scales. Some fish have teeth on all the bones in the mouth as well as the jaws. The heart has only one pump instead of two as in man. There are two sexes. Usually after the female lays the eggs which are called spawn, the male fertilizes them with his milt, and then in due time the young hatch from the eggs; but sometimes there is internal fertilization and the female gives birth to large, fully developed young. A codfish may lay over three million eggs. Most fish eat flesh, such as other fish, but some eat vegetable matter. Many fish have an internal bladder filled with air. Two leg or lower side fins, one or more back fin, one or more rear or anal fins, two arm fins, and one tail fin, are all any fish has. Some have less and some none. The tail is in most cases the chief propeller and the other fins serve to steer and balance. There are two kinds of fish, those having true bones and those with softer bones.

Very little is known of the fish of the Rocky Mountains Park. The following is a partial list of them.

Cut Throat Trout
Dolly Varden or Bull Trout
Cyprinoids such as minnows
Miller's-thumb or Blob
Northern Sucker
Lake Trout
Rocky Mountain Whitefish

No. 1.—Very large Fish Head. From Lake Minnewanka, Alberta. Presented by G. A. Stewart, D.L.S., 1893.

BLACK SPOTTED TROUT

BLACK SPOTTED TROUT, CUT-THROAT TROUT, *Salmo clarkii*.

THE Black-spotted trout is sometimes called the Cut-throat trout because of the red mark along the lower edge of the gill-covers. It is peculiar to the Rocky Mountain region, though northward it descends to the sea. It is an active

fish found in cold brooks, and usually does not attain great size. It differs from the Rainbow Trout of the Pacific slope of California in having a larger mouth and smaller scales. The generally sea-run Steelhead Trout is intermediate between the Cut-throat and the Rainbow, but attains much larger size than either of them. The Cut-throat Trout is very variable in different localities, and many geographical races have been described. Its upper parts always have small black spots which in some forms extend evenly from the snout to the tail, and in others are found only on the hinder parts. Its food is composed of living things found in the streams which it inhabits, as well as insects which accidentally drop on the surface of the water.

J. T. N.

No. 3.—Cut-throat Trout. From Bow River, Banff, Alberta, July, 1904.
Caught by Master Ralph Douglas, Banff, Alberta.
No. 4.—Cut-throat Trout.

DOLLY VARDEN TROUT

DOLLY VARDEN TROUT, BULL TROUT, *Salvelinus malma*.

THE Dolly Varden Trout, like the Brook Trout of eastern America, is a charr belonging to the genus *Salvelinus*. This genus differs from *Salmo* in having the vomer boat-shaped, with teeth only on its prominent front end. It has yellowish, red or blue spots, and lacks the small black spots characteristic of *Salmo*. The Dolly Varden is a larger, coarser fish than the eastern Brook or Cut-throat species, from which it does not differ very markedly in habits. It is widely distributed in northwestern America, and has the unsavory reputation, probably deserved, of being extremely destructive to the young of other trout and salmon.

J. T. N.

MINNOWS

MINNOWS.

DOUBTLESS several species of minnows occur in the Rocky Mountains Park. Minnows are small, weak species, feeding on minute animals or sometimes on vegetable matter. Dr. Bashford Dean found one of the genus *Notropis* in the hot springs at Banff.

J. T. N.

MILLER'S THUMB, BLOB

MILLER'S THUMB, BLOB, *Cottus onychus* and *Cottus philonips*.

THE genus *Cottus* is the freshwater representative of the sculpin, small fishes with more or less hard, spiny heads, which haunt the bottoms of all streams where members of the trout family are found, and are tremendously destructive to the eggs of trout, gorging themselves with eggs until even their mouths are full to overflowing. At other times they probably feed on any small animal life which they can catch unawares, as they are not strong swimmers. Their colours are dull and variegated, and blend with the bottom on which they occur. To take every advantage of this concealing resemblance, the little fishes lie quite still against the bottom, darting forward a short distance, to again remain motionless. Many forms have been described under different names from the western part of the country, but their differences and relationships are not yet well known.

J. T. N.

NORTHERN SUCKER

NORTHERN SUCKER, LONG-NOSED SUCKER, RED SUCKER, *Catostomus catostomus*.

THE sucker frequents the bottoms of streams, where it browses with its small protractile, curiously formed mouth, and goes up-stream to spawn. In general make-up it resembles the members of the carp or minnow family, but has the pharyngeal or throat teeth much more numerous, suggesting those of a comb. Neither carps nor suckers have teeth in the mouth. It reaches a length of two and one-half feet, and has very small, numerous scales for a sucker, there being about 100 in the side line. It is widely distributed in northern America, not coming south of latitude 40°.

J. T. N.

LAKE TROUT

LAKE TROUT, *Cristivomer namaycush*.

THE Lake Trout differs from other trout in its very long, strong teeth, which are numerous on the tongue, its forked tail and colour. The olive-greenish of its upper parts is everywhere marked with small, irregular pale or grayish spots. It is found in the deeper parts of northern lakes across North America, and reaches a very large size, but it is sluggish in comparison to its weight.

J. T. N.

No. 2.—Lake Trout, weight 24 lbs. From Lake Minnewanka, Alberta, July 13, 1904. Caught by Master D'Oyley Astley, Lake Minnewanka.

ROCKY MOUNTAIN WHITEFISH, WILLIAMSON'S WHITEFISH, *Coregonus williamsoni*.

THIS fish reaches a length of about a foot. It is slender and active for a whitefish. It takes the fly and is an excellent food fish. Adults have silvery colour; young are marked with vertical dark bands. The whitefish has the small adipose posterior dorsal fin of the trouts, but a much smaller, less formidable mouth.

It is found mostly in clear brooks or rivers northward from the Great Lakes across the Rocky Mountains to the Pacific. A small specimen was caught at Banff which the fisherman called a grayling, really quite a different fish.

J. T. N.

No. 5.—Rocky Mountain White Fish, female, length $16\frac{3}{4}$ inches, weight 24 ounces. From Bow River, September 9, 1910. Caught by S. C. Vick, Banff.

FISH TRAPS

FISH TRAPS.

No. 6.—Fish Trap. Seized in Forty-Mile Creek, near Banff, as unlawful for use in the Park. Presented by R. Robinson, May 10, 1910.

5. Reptiles of the Rocky Mountains Park

THE reptiles constitute one of the most interesting, but generally least known, classes of the animals having back bones. They are cold-blooded, breathe by means of lungs, and usually are covered with scales, and in some groups bony plates under the skin. Reptiles are not slimy, but have a dry skin. Very few kinds in the temperate region and only one in Canada are dangerous to man, but the majority of them are harmless and many even beneficial. Those that are living to-day are but a remnant of vast hordes that inhabited the earth in prehistoric times. In fact, of the twenty orders of reptiles now recognized by students, only four have living representatives, and one of these includes only one nearly exterminated species confined to New Zealand. The four orders of living reptiles are as follows:—

Order 1. *Testudinata* (Chelonia). Turtles and Tortoises. Representatives of this order are found in western Canada.

Order 2. *Rhynchocephalia*. One lizard-like reptile confined to New Zealand.

Order 3. *Crocodylini*. Crocodiles, Alligators, Cavials, and Gaimans.

Order 4. *Squamata*. Chameleons, Lizards, and Snakes. Representatives of this order are found in western Canada.

A. G. R.

6. Amphibians of the Rocky Mountains Park

THE common amphibians in North America are the frogs, toads, and salamanders. They spend part or all of their lives in the water or in damp places. Most of them lay their eggs in the water, and the larvæ or young, which breathe with gills, are known as tadpoles or polywogs. Some amphibians, especially salamanders, are often confused with reptiles because of a similarity in form, but almost all reptiles have scales, whereas amphibians have a smooth, slimy skin without scales except in a few rare species. There are two orders of extinct amphibia and three orders of living forms. The latter are as follows:

Order 1. *Apoda* or *Coecilians*. These are legless, and worm-like, inhabiting tropical and subtropical regions.

Order 2. *Caudata*. These have tails. They include the mud-puppies, sirens, and salamanders. Representatives of this order are found in western Canada.

Order 3. *Salientia*. These are tailless. They include the frogs and toads. Representatives of this order are found in western Canada.

A. G. R.

7. Shellfish of the Rocky Mountains Park

SHELLFISH

SHELLFISH or Mollusks are animals having soft bodies covered by a muscular skin, and nearly all kinds secrete a covering shell which is a part of them from which they cannot get away, mostly made up of lime, for protection and support—a sort of outside skeleton. In a few the shell is internal. Seventy-five per cent of the kinds have one shell, and many of these are coneshaped spirals, others have two shells fastened together with a hinge. A few have still more parts. Many have a shell door which they close when they withdraw into their shells. Nearly all shells have only one chamber. The shells of some are like porcelain, of others like pearl; fibrous, horny and glassy shells also exist. The shell is the most noticeable feature of shellfish, but not the most important characteristic of different kinds. The heart has only one pump. The blood is bluish or white and they are considered cold blooded. Some live on land and breathe air, others in salt or fresh water. Some kinds have males and females, but some combine both in one animal. Some kinds bring forth the young alive, while others lay eggs. Many are eaten by man and even more are eaten by lower mammals, birds and fish.

8. Insects of the Rocky Mountains Park

INSECTS

INSECTS, or cut-into animals, have the body articulated or divided into segments, often into three regions, namely, head, chest with wings and legs, and abdomen. They are little boneless animals with a trunk or a mouth opening lengthwise and eyes without winkers. They have several feet, the muscles are fixed to the inside of their hard though sometimes flexible skins, and unlike other animals they breathe through a row of holes along the sides of the abdomen that connect with two long interior air tubes having smaller branches. They usually have wings. The head has a pair of feelers, the variety of which is one of the chief ways of classifying insects. Most insects change both form and habits very much in growing. Some insects do not change in shape, but shed their old skin for a new as they grow larger.

Insects are generally hatched from eggs, although a few are born alive. The first form out of the egg is a larva or caterpillar. These forms differ greatly according to kind. Usually these larvae turn into a motionless chrysalis without distinct head, legs, and wings. After a rest in this stage they burst out of the chrysalis shell and fly away. Insects usually feed on liquids such as honey and other juices of plants.

There are seven great divisions of insects.

1. *Hymenoptera*, with four wings, of which the bee is an example.
2. *Lepidoptera*, with four wings, of which the butterfly and moth are examples.
3. *Diptera* with two wings, of which the horsefly is an example.
4. *Coleoptera*, with sheathed wings, of which the beetles are examples.
5. *Hemiptera*, with sheathed wings, of which true bugs and moth are examples.
6. *Orthoptera*, with sheathed wings, of which grasshoppers and locusts are examples.
7. *Neuroptera*, of which the ant lion and dragonfly are examples.

9. Plants of the Rocky Mountains Park

PLANTS

PLANTS make up the vegetable kingdom and are living organized beings, mostly without sensation. Botany is the study of plants.

The chief plant groups of the Rocky Mountains Park are as follows:—

Trees

Shrubs

Herbs

Grasses Sedges and Rushes

Ferns Horsetails and Lycopods

Mosses

Algæ Liverworts and Lichens

Fungi

Moulds and Bacteria

TREES

THE following ten kinds of trees are found in the Rocky Mountains Park. Everywhere on the lower slopes and in the valleys of the Park, even in the museum grounds, are to be found lodgepole pine, white spruce and aspen. The Douglas fir is not so generally distributed, but can be seen either on Tunnel or Sulphur Mountain along the foot-path. Balm-of-Gilead and mountain birch grow along the river flats of the lower valleys. At the higher altitudes there is abundance of Engelmann spruce and balsam fir, while white bark pine is of frequent occurrence in small quantity on or near the mountain tops. These three species occur on Sulphur Mountain. Alpine larch is found in a few localities at timber line, as at the summit of Simpson Pass. The lodgepole pine holds exclusively a larger part of the Rocky Mountains Park than any other tree.

A. Kn.

PINES

LOGGEPOLE PINE, *Pinus contorta*, Loud., var. *Murrayana* Engelm.

THE lodgepole pine has qualities by which it has taken, and continues to hold, possession of a very large percentage of the soil of the Rocky Mountains Park to the exclusion of other species, and has spread over large areas formerly occupied by white spruce. The tree begins to bear seed early, and on many individuals the cones remain closed on the branches for a long time, often ten years or more, and do not shed their seed, which nevertheless retains its vitality. A fire going through the woods may kill every tree on large areas, but it leaves the ground a good seed bed. The hard cones protect the seed, but the heat opens them and liberates it, and soon the ground becomes covered with a growth of young pines, often so dense that one can penetrate the thicket only with great difficulty. A fire, however, going through young growth too small to bear cones is destructive to the species, as every tree must come from a seed.

The wood is used in western Canada for lumber, mining props, railway ties, and other purposes.

The lodgepole pine grows everywhere in the Rocky Mountains Park on the lower slopes and in the valleys. Specimens may be seen in the Museum grounds.

A. Kn.

WHITE-BARK PINE, *Pinus albicaulis* Engelm.

THE fresh cones of this tree are beautiful objects of a deep purple colour. The leaves are from one and one-half to three inches long and are in bundles of five each. The branches are exceedingly tough. The trunk is low, long-branched, twisted or crooked, and on exposed summits the tree is often reduced to a sprawling shrub with enormous branches spread over the ground. It is a tree of the high summits. The wood is not used commercially.

The white-bark pine occurs frequently in the Rocky Mountains Park in small quantity on or near the mountain tops.

A. Kn.

SPRUCES

WHITE SPRUCE, *Picea canadensis* (Mill) B. S. & P.*

BEFORE the Rocky Mountains Park was established forest fires were frequent and the spruce was then at a great disadvantage. The bark is thin and the tree is easily killed. It reproduces only from seed and does not bear every year. Fire leaves the ground a good seed bed, but this is of no avail if it occurs in a year when the spruce is not throwing seed. Trees left alive may shed seed the next year, but this is likely to fall among grass, shrubs, and leaves that have covered the ground in the meantime, and is likely to perish. Lodgepole pine has spread over large areas formerly occupied by white spruce.

The foliage of the white spruce is of a light blue-green colour, and in some individuals has a distinct whitish tinge. The needles are about an inch long, are inserted singly on the twig, and are sharp pointed. The young twigs are smooth and free of hairs.

White spruce is one of the most important timber trees of northeastern North America, being chiefly used for lumber and paper pulp.

It grows everywhere in the Rocky Mountains Park on the lower slopes and in the valleys. Specimens may be seen in the Museum grounds.

A. Kn.

ENGELMANN SPRUCE, *Picea Engelmanni* Engelm.

VISITORS to the Park generally miss a great pleasure by failing to observe the cones on the trees. The reddish-purple young cones on the spruce trees in July or early August are objects of exquisite beauty, especially on high mountain slopes. They mature about the first or second week in September, shed their seed, and soon fall from the trees.

The foliage of the Engelmann spruce is a deep blue-green. The needles are inserted singly, are sharp pointed and about one inch long. Young twigs are covered with minute hairs. Numerous tassel-like branchlets hang from all the main horizontal branches. The bark becomes scaly on even quite young trees. The wood is much used commercially.

The Engelmann spruce grows in the Rocky Mountains Park in abundance at the higher altitudes.

A. Kn.

*Some botanists class this species as it appears in the Rocky Mountains of Canada as *P. albertiana*.

LARCHES

ALPINE LARCH, LYALL'S LARCH, WOOLLY LARCH, *Larix lyallii*, Parl.

THE alpine larch is sometimes called "woolly larch," as the young branch shoots are coated with a fine white wool. It is a cone bearer, but is not evergreen, as it sheds its leaves every autumn. The foliage is a light bluish-green, turning late in autumn to a bright lemon yellow, by which colour it can be distinguished on high distant peaks and crests. The leaves are in clusters of thirty or forty each.

It is a timber line tree of high mountain slopes and plateaus. It has a stunted appearance, is from thirty to forty feet high and from ten to twenty-four inches in diameter. The wood is suitable for lumber, but is not used commercially.

The alpine larch grows in the Rocky Mountains Park in a few localities at timber line. Specimens may be seen at the summit of Simpson Pass.

A. Kn.

FIRS

ALPINE FIR, BALSAM FIR, *Abies lasiocarpa* (Hook.) Nutt.

THE needles of the balsam fir resemble those of the spruce, but they are crowded together on the upper sides of the branches, while spruce needles generally stand out all around the twigs. Besides, if the tips of the individual needles are examined closely, most of them will be found to have each a shallow notch, while a spruce needle is sharp pointed. The cones of the balsam fir stand erect; those of the spruce hang down. Balsam bark is smooth; spruce bark is scaly.

The wood is light, soft, straight-grained and both splits and works well, but is not much used commercially, as the trees furnish little clear timber.

The alpine fir grows in abundance in the Rocky Mountains Park on high mountain slopes ascending to timber line.

A. Kn.

DOUGLAS FIR, DOUGLAS SPRUCE, *Pseudotsuga taxifolia* (Poir) Britt.

IN forest fires the Douglas fir has a great advantage in its thick bark. The bases of large trees are often much blackened by repeated fires while the trees continue to live and their foliage to retain a healthy colour. The bark is much thicker and more deeply furrowed than that of any other species in the Rocky Mountains Park.

The foliage resembles that of the spruce or balsam fir, but the needles have rounded tips, while spruce needles are sharp-pointed, and balsam fir slightly notched.

The species can be easily identified by the cones, as they have three-pointed trident-like thin bracts protruding from among the scales.

The wood is light, soft, fine and straight grained and is much used commercially.

The Douglas fir occurs throughout the Park and can be seen on Tunnel Mountain and on Sulphur Mountain.

A. Kn.

No. 4.—Large Douglas Fir, branch and stem, grown partly around the leg bones of a buffalo, which were placed in the crotch of tree long before it was cut down. Found by Stoney Indians in the Foothills near Morley, Alberta. Loaned by T. W. Wilson, Banff, Alberta, 1908.

POPLARS

ASPEN, *Populus tremuloides* Michx.

THIS is one of the poplars. It is well known to all classes of people on account of the trembling habit of the leaves. This is due to the leaf-stems being much flattened vertically.

Poplar trees have a great advantage in the struggle for existence in being able to reproduce from the root. After a fire young trees again promptly cover the ground, often growing in one year to five or six feet in height. The wood is soft, however, and is easily attacked by fungi, which eventually kill the tree, although it is considerably harder in north-western Canada than in warmer climates, and is suitable for flooring and rough lumber, but on account of the abundance of conifer timber is not much used. In northeastern North America it is much used for paper pulp.

The aspen may be seen everywhere on the lower slopes and in the valleys of the Rocky Mountains Park. Specimens may be seen in the Museum grounds.

A. Kn.

BALM OF-GILEAD, BALSAM POPLAR, *Populus balsamifera* Linn.

BALM-OF-GILEAD is a poplar tree. It is sometimes called balsam poplar on account of the fragrant balsam with which the buds and young leaves are coated. It reproduces freely from the root. The trunk sometimes attains a diameter of thirty to forty inches and furnishes clear lumber which is much used for boxes, cooperage, and paper pulp.

The Balm-of-Gilead may be seen along the river flats of the lower valleys in the Rocky Mountains Park.

A. Kn.

BIRCHES

MOUNTAIN BIRCH, *Betula fontinalis* Sarg.

FOR a long time this tree was thought to be the western birch and was mentioned by botanists as *Betula occidentalis* Hook. The mountain birch is a graceful tree or shrub growing not more than thirty feet high and ten inches through, while the western birch is a large tree often one hundred feet high and three feet in diameter. The bark of the mountain birch is of a shiny copper colour; that of the western birch dark brown.

On account of its small size, mountain birch is not used commercially.

The mountain birch grows in the Rocky Mountains Park along the river flats of the lower valley.

A. Kn.

10. Minerals of the Rocky Mountains Park

MINERALS

MINERALS are natural substances not produced by either plant or animal life. The chemical composition of each kind is always the same, and under favorable conditions each kind is of a characteristic geometric crystalline form. Sugar being a natural inorganic material resembles a mineral, but is not as it is produced by plant life. Clear examples of minerals, include quartz, diamonds, gold, feldspar, and water. If solid minerals are warmed enough, they melt : thus water and ice are one mineral.

S. J. S.

Minerals from the vicinity of Banff, Alberta.

Lead Ores from British Columbia.

Copper, Mercury and Molybdenum Ores from Alberta and British Columbia.

11. Rocks of the Rocky Mountains Park

ROCKS

ROCKS are masses of mineral particles in a compact form, which make up the crust of the earth. They have no crystal form and do not possess a definite chemical composition.

Rocks are divided into three main classes.

A. Igneous Rocks : Consolidated from a molten state. These contain no fossils. Examples : granite and basalt. These have not been found in place in the Rocky Mountains Park.

B. Sedimentary Rocks : Brought together in layers mainly by wind and by water. Many of these contain fossils or petrified remains of plants and animals. Examples : limestones, shales, and conglomerates. Sedimentary rocks are the most common rocks found in place in the Rocky Mountains Park.

C. Metamorphic Rocks : Igneous and sedimentary rocks which have undergone some change. Fossils in sedimentary rocks turned into metamorphic rocks are usually ruined during the metamorphism or the change. Examples : gneisses, schists and marble. These are rarely found in place in the Rocky Mountains Park.

S. J. S.

ROCK TYPES

ROCK WEATHERING

12. Fossils of the Rocky Mountains Park

FOSSILS

FOSSILS are the remains or traces of animals and plants which have been preserved by burial in the rocks forming the earth's crust. The oceans of the past covered large portions of the present continents, and the dead bodies of the animals which swam around in or crawled upon the bottom of these early seas gradually settled to the bottom and disappeared beneath the deposits of sand and mud carried into them by the rivers of those times. Many land plants and animals either have been similarly buried or owe their preservation as fossils to processes which resulted in their entombment upon the land surface. The rocks now forming the earth's crust include the consolidated representatives, many of them fossiliferous, of the sand and mud or other sediments, both land and marine, which have been deposited on the earth during its geologic history, a space of time which is reckoned in millions of years, and is divided into periods, beginning with the pre-Cambrian, and passing through the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Permian, Triassic, Jurassic, Cretaceous, and Tertiary to the Recent. Most of these periods are represented in the rocks exposed in the Rocky Mountains Park, and Mount Field, just west of the confines of the Park, bears upon its upper slopes what appears to be the most wonderful fossil locality in the world.

The variety of form and the degree of petrification represented in what are termed fossils are remarkable; thus the mammoths which have been found in the Siberian tundras in a state of preservation which enables us to study even the stomach contents are fossils; footprints upon the muds of past ages are fossils, as are the impressions of the wings of insects or the leaves of plants. They are often, even largely, fragmentary and are preserved to us in the following ways : (1) as specimens showing more or less of the original substance, such as the shells of clams; (2) as specimens in which the former structure, even to the minutest detail, is preserved by the mineral replacement of these features, such as petrified wood; (3) as molds, where the original substance has entirely disappeared during the process of fossilization, leaving a cavity which shows only the external form of the animal or plant to which it owes its existence; and (4) as casts, or molds whose natural filling has yielded a counterpart of the dissolved organism.

Fossils are chiefly valuable for the indications which they give as to the relative ages of the rocks in which they occur. Since the order of deposition of the rocks, however, also enables us to determine the relative order in which these organisms appeared upon the earth, their constant changes afford invaluable data as to the course of evolution. For convenience of description fossils may be divided into three groups: plants, invertebrates (animals having no backbone), and vertebrates (backboned animals).

L. D. B.

FOSSIL PLANTS

VEGETATION has been appealed to in explanation of certain widespread pre-Cambrian deposits, indeed a long series of inferences lends support to the assumption that vegetable life must have had its origin as early if not earlier than that of animal life. Indistinct traces in the form of seaweed-like markings occur in the rocks of Cambrian time, but direct evidence of plant life in the first three periods is very meagre. The fourth period, or Devonian, land surface was clothed with a luxuriant though monotonously uniform growth of ferns, club mosses, and horsetails, many of which attained the rank of trees, a flora which becomes advanced and diversified in the next period and is preserved to us in the form of coal. During the formation of these widespread deposits our available evidence points to a remarkable uniformity of climate throughout the world, climatic zoning being first demonstrable in later periods. Coal deposits are in general either Carboniferous or Tertiary in age, those of the Rocky Mountains Park being confined to the latter period. With the close of the first coal forming period flowering plants first attained prominence, and the plants rapidly assumed modern characters, willows, poplars, oaks, maples, elms, and chestnuts being represented.

L. D. B.

FOSSIL INVERTEBRATES

THE invertebrates are the first fossils of which we find geological record. They seem to spring at once upon the stage of action, peopling even the lowest of the Cambrian rocks with representatives of all the larger groups. Thus the life of this early period included Protozoa (rhizopods), Coelenterata (sponges, corals, jelly fish), Echinodermata (cystoids), Vermes (worms), Molluscoidea (brachiopods), Mollusca (gastropods), and Crustacea (trilobites). That the life in the pre-Cambrian seas was large and that it had existed for a period long

antedating this sudden apparition there can be but little doubt, and many theories have been proposed to explain the imperfection of our record. By their numbers and the infinity of forms into which they became diversified the invertebrates have played a leading role in the delineation of the geological history of our earth, and representatives of the more important stages in this progress are to be found in the rocks exposed in the Rocky Mountains Park.

L. D. B.

FOSSIL VERTEBRATES

VERTEBRATES are first known as fossils in the Ordovician, the second of the periods into which geological time is divided, where they occur as the scales and plates of fishes. The development of fishes progressed with such rapidity that the Devonian has popularly been called the age of fishes, yet fossils representing other vertebrates are comparatively rare in rocks of that period. In the next geological period, the Carboniferous, amphibians (frogs, toads, newts, and salamanders) are of great importance, and in each of the succeeding periods follow reptiles, turtles, birds, and finally mammals. This progression is a remarkable one and rapidity of change seems to have been the rule, yet the sharks, the gar pike, and the sturgeon of to-day closely resemble their geological ancestors and may be mentioned as present survivals of some of these earliest types. The region east of the Rocky Mountains Park contains large areas of Cretaceous rocks from which have been derived hundreds of specimens of fishes, reptiles, turtles, crocodiles, and mammals. Many of these, particularly the herbivorous and carnivorous reptiles, are of very large size, up to thirty-two feet in length, and are often represented by almost complete skeletons preserving details even as minute as impressions of the skin.

L. D. B.

No. 0.—Two pieces of fossil vertebrae. Found at Dead Lodge Canyon near the mouth of Berry creek, which flows into Red Deer river, Alberta. Presented by L. L. Wilson, 1903.

13. Weather of the Rocky Mountains Park

WEATHER

WEATHER is the condition of the atmosphere or air at any place. It relates to the pressure of the air, the humidity or moisture contained, the temperature or heat, the motion or wind, and the electricity or lightning. The study of weather includes the study of clouds, dew, fog, snow, hail, rain and wind. Climate is the sum total of the weather of a place or region.

The chief weather conditions of the Rocky Mountains Park are as follows :—

The general pressure of the air is light, that is, the air is rare and becomes more so the higher one goes in the Park, and is usually dry, containing little moisture. The summers are cool with warm sunshine; the winters are steadily cold and crisp. There is not very much wind. Electric storms occur, but they are not especially severe. It is seldom cloudy for any great length of time. There is not much dew. Fog or clouds may occasionally be seen like a belt part way up the mountains. Snow covers the ground a long time and is rather deep.

THE climate of Banff is somewhat representative of the Rocky Mountains Park as a whole, although some higher places have more snow and cold and some lower spots have less snow and are warmer. There may be frost and snow monthly in places above 7,000 feet. It is exceptionally healthful and enjoyable. At this altitude, in a climate of its rarity of the air, a person is often stimulated and exhilarated, but the increased or quicker action of the heart should warn him to conserve his strength, take proper rest and so gain in health.

The mean annual precipitation during sixteen years is 20.67 inches with a maximum of 30.51 in 1902, and a minimum of 14.51 inches in 1906. The average annual amount of snow on the ground for sixteen winters is from 12 to 15 inches, with a maximum at any one time of 48 inches, the lowest maximum amount being 8.

At the meteorological observatory on Sulphur Mountain, temperatures, especially during a cold snap in winter, sometimes but not always vary considerably from those in the valley. A minimum of 30 degrees Fahrenheit higher than the corresponding valley minimum has been recorded during a cold snap.

N. B. S.

SUMMER

THE average summer in and about Banff is mostly made up of temperately warm days with little moisture in the air, or scientifically speaking, days with low humidity. The nights are cool. Days of cloudless sky are not uncommon. The rainfall, which is moderate, often occurs at night, the weather again becoming fine during the day. Heavy continued downpours are of seldom occurrence. The mean yearly rainfall, not including snow, for sixteen years is 13.08 inches, the maximum occurring in 1902, with 19.41 inches, and being three inches more than the maximum of any one of the remaining 15 years; the minimum occurring in 1904 was 7.19 inches.

The mean yearly number of thunderstorms in 19 years is 11; the maximum number being 21, and occurring in 1897; the minimum being 2, in 1909. They occur from May to September inclusive, but not often in May or September. The atmosphere in summer becomes drier or less humid as the temperature rises, while in the East it becomes more humid with higher temperatures.

Frosts occur some years even in June, July, and August. The average or mean yearly temperature from May to September inclusive for sixteen years, is 51 degrees Fahrenheit. The extreme of temperature is 90.5, which is exceptionally warm. Temperatures as high as 80 to 87 occur on an average only about six times during the summer.

N. B. S.

WINTER

THE winter season about Banff is usually very fine and bracing, with many cloudless and bright days, especially in February.

The snowfall usually makes good sleighing all winter, and with a dry and more or less continued temperately cold atmosphere, slushy conditions underfoot very seldom occur. Snow often falls during the night, the weather again clearing by morning almost as much as in summer. The mean annual snowfall for sixteen years is 77.5 inches or 6 feet 5½ inches, with extremes of 128 inches or 10 feet 8 inches, in 1909, and 38.5 inches, or about 3 feet, in 1905. Cold snaps usually last three days, and end with a wind from the west or south-west. At first the wind is chilly, but each day after this wind commences the weather becomes milder, until the temperature nears the freezing point or higher, when more or less ordinary temperatures are again established.

There is considerable calm weather in winter, and when low temperatures are reached it is exceptional to have any wind. February is usually the finest winter month, for then there are many fine, clear, bright, calm days, and while the temperature may drop low at night, the bright sunshine of the day is warming and the air is charming, bracing and healthful.

The mean of the minimum extremes of temperature for sixteen years is about 30 degrees below zero Fahrenheit; the extreme 47 below zero is exceptionally cold.

N. B. S.

14. Antiquities of the Rocky Mountains Park

THE antiquities of the Rocky Mountains Park proper have not been sufficiently studied to give a general idea of the material, culture or handiwork of the area, but the antiquities of the Thompson River region inhabited by Shuswap Indians, whose country extends to the region bounding the Park on the west, are perhaps as well understood as those of any part of Canada.

Points chipped from stone for arrows are found that are like those of many other parts of North America. Pebbles battered on the ends from use as hammers, some with a groove pecked around them to hold a handle in place are also found. Such hammers are characteristic of the Great Plains and have been seen in use by modern Indians in that area.

Sites of villages of semi-subterranean houses are found in two places within two miles of Banff, and a site where stone was broken up with pebbles used as hammers and chipped into points for arrows and scrapers has been found on the lower right end of Lake Minnewanka.

SEMI-SUBTERRANEAN HOUSE SITES

THERE are some fourteen semi-subterranean house ruins scattered on the river flat from the foot of Mount Rundle towards Bow River to the edge of the Golf Grounds in the Rocky Mountains Park. These are about one mile from Banff, and nine are in an irregular line. Four and a doubtful ruin are on one side of this line. The remaining ruin, also a doubtful one, is on the other side. These are nearly circular holes from about one to four feet in depth, and from about ten to nearly fifteen feet in diameter, with the excavated earth thrown out in a low ridge all around each hole. The limit of this ridge of earth in no one is over thirty feet from that of another, while the widest space between any two in the line is about twelve feet, and others lap upon each other.

A few similar ruins are scattered in the woods on the slope between the base of Tunnel Mountain and the flat where the animal paddock is located. These ruins near Banff mark the present known general eastern limit of this type of house.

These holes may be understood from the following facts : The Shuswap Indians living just west of here formerly built their winter houses partly underground. They dug a hole from ten to thirty feet in diameter upon the edge of which they rested a roof that covered the entire excavation. An opening was left in the top which served as doorway, window and chimney. The Indians entered and left the house by means of a ladder made of a notched log. On all the old Shuswap village sites near Kamloops are found numbers of circular depressions, ten to thirty feet in diameter, and two to five feet deep. Each is surrounded by a ridge of earth. It would seem that these depressions are the remains of winter houses similar to those of the modern Indians.

15. Indians of the Rocky Mountains Park

INDIANS

"INDIANS" is the name generally given to all the aborigines or original people native to both North and South America. It was first wrongly applied by the Spaniards at the time of the discovery of America, under the mistaken idea that they had landed in India. The Eskimo are often spoken of as different from the Indians, but they belong to the same group. No one knows how long the red race has lived here, but as yet no satisfactory evidence has been produced to show that they lived here until after the glacial period when the northern part of America was covered with an ice cap similar to that now covering much of Greenland.

Some consider that the Indians originated in this hemisphere, others that they came from the Old World. Certainly their life has been influenced by some phases of Asiatic life and in turn Eskimo are known to have colonized northeastern Asia in comparatively recent times.

Compared with other races, all Indians represent a single physical type, although there are many differences between different tribes and minor differences between individuals. Generally they have dark eyes and dark straight hair, high cheek bones, little or no beard, and aquiline noses. Their colour in general is coppery and they are often called red men, though some might be mistaken for Chinese or weatherbeaten Italians.

There were over 200 tribes of Indians in America north of Mexico. Some of these spoke languages as closely related as Spanish and French and accordingly were classified into some fifty-eight language families or linguistic stocks. Each stock differs about as much from another as Turkish, Chinese and English. There are perhaps 6,000,000 Indians in North America and 9,000,000 in South America.

The most important Indian tribes of the Rocky Mountains Park were probably the Kootenay, Stoney, and Shuswap. The earliest inhabitants of the Park proper were probably hunting bands of Kootenay, and there may also have been Blackfoot influence, but the Blackfoot seldom came into the Canadian Rockies. The Stoney have been there perhaps less than two centuries. The Shuswap may never have been there except in later days, as visitors to the Stoney. Some of the old fur traders in their annals refer to the Snare Indians as occupy-

ing a large part of the Rocky Mountain region. It is not certain whether the Snare Indians are the Kootenay, the Shuswap, or the Sekani.

- No. 1.—Spoon, apo'otoc', made from the horn of the mountain sheep, said to be very old, used in drinking berry soup. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 2.—Man's Saddle. Beaded and with native stirrups, commonly used by Indians before Mexican saddles were introduced. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 4.—Anklets, embroidered with dyed porcupine quills, used as part of the dance ornaments worn by men only. Loaned by Rev. H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 5.—Fancy Tomahawk. Part of the sacred paraphernalia used in some dances by men only. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 6.—Holy Pipe and paraphernalia used in taking an oath. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 8.—A sort of banner made of a stick, with a fist carved on one end, and with an attached skin. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 9.—Medicine Bag, and instruments belonging to Peter Crowshield. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 10.—Gopher Skin and Cane pipes used by Medicine Men. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 11.—War Cap and Dress, belonging to Wolf Collar. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 12.—Bead Necklace, worn as a charm, belonging to "Many Chiefs" and given up on accepting Christianity. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 13.—Necklace, worn as a charm. Made of locks of long hair, probably scalps, as part of the scalp is attached to the roots of the hair. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 14.—Bone Necklace, worn in war as a charm, belonging to great war chief "Calf Child." Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 15.—Cap and Coat, belonging to "Wolf Collar." Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 18.—Small Bag. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 19.—Small Bag. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 20.—Hand Bag, used as a little satchel for food, and other things, but not typical. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 21.—Very old festive Pipe. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.

- No. 22.—Moccasins of ordinary style. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 23.—Steel, used by women for sharpening knives. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 24.—Necklace, of elk teeth and beads. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 25.—Rattle. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 26.—Carved Stick, used in certain religious ceremonies. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 27.—Bow and Arrows, made about 1878. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 28.—Beaded Belting, worn by men on blankets on special occasions. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 29.—Rattle, used at all religious and festive dances. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 30.—Beaded Awl Case. Awls are used by women in making moccasins. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 31.—Arrows. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 34.—Very old Hammer, used by the women as in preparing dried meats. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 37.—Moccasins. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 38.—Quiver. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 39.—Bowl, the common drinking vessel of about 1798. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 40.—Purse or pocket used for holding such things as a small looking glass or treaty ticket, used by men only. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 41.—Woman's Saddle. Very old. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 43.—Man's Shirt. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 45.—Headdress. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 47.—Inside lining of chief's tepee, made of two skins sewn together to form one very large piece. These skins are probably of domestic cattle, and are dyed with designs full of meaning to these Indians. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 6.—Drinking Bowl, made about 1858 to 1868, for many years belonging to minor chief "Big Road," presented on his death-bed. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. A.—"Awena" Rattles. Sometimes used at sacred festivals. They belonged to former head chief "Old Sun," to his grandfather and others before him, since before 1811. Loaned by N. B. Sanson.

- No. B.—Man's Beaded Vest. Made about 1886. Loaned by N. B. Sanson.
- No. C.—Bag with porcupine quill embroidery, used for pipe tobacco, etc., by "Big Eyes," about 1886. Loaned by N. B. Sanson.
- No. D.—Tobacco pipe stoker. Used at festivals. Owned by Mokingi-Soki-Kinni. Loaned by N. B. Sanson.
- No. E.—Modern Medicine Bag, containing medicine. Loaned by N. B. Sanson.
- No. F.—Awl Case. Loaned by N. B. Sanson.
- No. G.—Tanning knife with handle of elk antler made about 1811 to 1831. Loaned by N. B. Sanson.
- No. Ga.—Awl. Made about 1811. Loaned by N. B. Sanson.
- No. H.—Modern Headdress, worn in "Kaispa" dance. Loaned by N. B. Sanson.
- No. I.—Whip used on holidays and at dances. Loaned by N. B. Sanson.
- No. J.—Knife for tanning goat skin, made of buffalo bone about 1811. Loaned by N. B. Sanson.
- No. K.—Buffalo charm, made about 1896, to represent a buffalo with an arrow pointing at its heart. Loaned by N. B. Sanson.
- No. L.—Headdress worn by Head Chief "Old Sun." Made of human hair about 1861. Such headdresses were worn by men as a special charm and assurance of longevity. Loaned by N. B. Sanson.
- No. M.—Belt, ornamented with gold and blue beadwork. Loaned by N. B. Sanson.
- No. N.—Paint Pouches, containing vermilion paint and typical of everyday life. Made about 1861. These are carried by the older Indians every day and used by them. Loaned by N. B. Sanson.
- No. O.—Stone Axe, used for killing "antelope" before guns were plentiful. Made about 1811. Loaned by N. B. Sanson.
- No. P.—Tanning Knife, with sheath made of buffalo hide. This belonged to a woman called "Greasy Forehead." It was made about 1761. Loaned by N. B. Sanson.
- No. Q.—Headdress, with ermine skins, used in the "Kaispa" or "Sioux" dance, by Makapakinfe, otherwise known as "Bad Wolfe." Loaned by N. B. Sanson.
- No. R.—Women's Leggings. "Natsikoppuinani." Loaned by N. B. Sanson.
- No. S.—Drinking Bowl. Made about 1811 and owned by a former chief called "Lone Chief." Loaned by N. B. Sanson.
- No. T.—Bone Necklace, owned by the son of "Fat-Horse." Loaned by N. B. Sanson.
- No. U.—Rattle, "Onakee." Loaned by N. B. Sanson.
- No. V.—Boy's Coat. Made of buckskin. Loaned by N. B. Sanson.
- No. W.—Isksisipistatsis. Made about 1866. These were in common use. Loaned by N. B. Sanson.
- No. X.—Woman's belt. Owned by Mrs. Donald. Loaned by N. B. Sanson.
- No. Z.—Woman's Saddlebag, worn under the saddle by "Ridge and Water" the wife of "Only Owl." Small belongings, shawls, etc., were carried in such bags. Loaned by N. B. Sanson.
- No. AA.—Bag with porcupine embroidery. Made about 1841. Loaned by N. B. Sanson.
- No. BB.—Man's Shirt, "Old Brass," with trimmings of human hair. This is very old. Loaned by N. B. Sanson.
- No. CC.—Paint bag, for sacred red powder. Made about 1811 and owned by "Tried-to-Fly." Loaned by N. B. Sanson.

- No. DD.—Fat bag, made of the skin of the heart of the buffalo for the fat from around the heart of the buffalo, which was rubbed on the face, etc., before sacred red powder was applied. Made about 1811 and owned by "Tried-to-Fly." Loaned by N. B. Sanson.
- No. EE.—Sacred Feather, worn on the head as a charm against bad spirits. Loaned by N. B. Sanson.
- No. FF.—Moccasins Made about 1881. Loaned by N. B. Sanson.
- No. GG.—Necklace used in the Horse dance of the buffalo days. Adorned with many toes of the deer which have bell tongues in them to give a jingling noise. Loaned by N. B. Sanson.
- No. HH.—Beaded Dress, with fringes, belonging to a young Blackfoot girl. Made about 1871. Collected from "Wolf Ear." Loaned by N. B. Sanson.
- No. II.—Bag, made of Buffalo hide. Made before 1836, for holding sacred rattles, sacred charms, such as the "Awena," etc. Collected from "Bull Bear." Loaned by N. B. Sanson.
- No. JJ.—Man's Necklace of blue cloth with brass ornaments. Loaned by N. B. Sanson.
- No. KK.—Typical Blackfoot Council Pipe, made about 1866, with a long stem made about 1871. Belonged to "Running Eagles." Loaned by N. B. Sanson.
- No. LL.—Drinking Bowl, made about 1836, owned by Head Chief "White Pup" and handed down to him from former chiefs as an heirloom. Loaned by N. B. Sanson.
- No. MM.—Pipe, made about 1851, used in Indian Pow Wows for more than half a century. Loaned by N. B. Sanson.
- No. NN.—Pipe and stem, made about 1871 to 1881. Loaned by N. B. Sanson.
- No. OO.—Fat Ladle, made about 1871. Belonged to son of "White Elk." Loaned by N. B. Sanson.
- No. PP.—Bag, made of skin of deer legs without removing hoofs. Loaned by N. B. Sanson.
- No. QQ.—Leggings or Trousers, with red-beads "The Keg." Loaned by N. B. Sanson.
- No. RR.—Headdress called "The Horn Medicine," Otskinaisaam, made about 1881 and formerly owned by the late (Ai-i-sui-saam), "Boss-rib-Medicine." There were four such headdresses on the Reserve, and they are worn by the leaders of the dance society known as the Kanatsonu'ta, "The Crazydogs." The leaders decide everything concerning the dances. A modern "Awena" rattle belongs with this headdress. Loaned by N. B. Sanson.
- No. SS.—Pipe, for personal use, made before 1811 and owned by "Tried-to-Fly." Loaned by N. B. Sanson.
- No. TT.—Three charms, made about 1861 and used in the Buffalo days. Loaned by N. B. Sanson.
- No. UU.—Pipe, made of stone, made about 1871, with wooden stem made about 1881, and owned by "Bull Bear." Loaned by N. B. Sanson.
- No. VV.—Dress, made of Buckskin. Loaned by N. B. Sanson.
- No. WW.—Moss bag, decorated with many beads, and used as a baby hammock. Loaned by N. B. Sanson.
- No. XX.—Two charms of the most common type, made about 1886. They were placed on their feet at night and the Indian went in search of buffalo in the direction in which they fell by morning. Loaned by N. B. Sanson.

- No. ZZ.—Three charms used in buffalo days. The large one determined the direction of the buffalo. The others were a charm against disease. Loaned by N. B. Sanson.
- No. 0.—Pudding Bowl, cut out of wood about 1836. Loaned by N. B. Sanson.
- No. 0.—Vest, made of cloth and beaded about 1891. From the Cree. Loaned by N. B. Sanson.
- No. 00.—Modern Pipe and stem. Loaned by N. B. Sanson.
- No. 00.—Leggings. Loaned by N. B. Sanson.
- No. 00.—Powder Horn, made from the horn of a domestic critter, said to have belonged to the Cree Chief Poundmaker. Collected during the Riel Rebellion of 1885. Loaned by N. B. Sanson.
- No. 00.—Powder Horn. Found. Loaned by N. B. Sanson.
- No. 00.—Headdress, with porcupine embroidery and hair trimming. Loaned by N. B. Sanson.

STONEY

STONEY, MOUNTAIN ASSINIBOINS, *Tschantoga*.

THE name, *Tschantoga*, means "people of the woods." They are a division of the Assiniboin now officially classed by the Department of Indian Affairs as "Stonies."

They have a pleasant visage, are active and fleet of foot, and are said to be the most energetic of all the Indians of the Canadian North-West. They now live by stock-raising, by selling timber, furs, and beadwork, and by laboring for ranchmen.

A mission was established among them in 1873, and in 1904 the McDougall boarding school at Morley accommodated forty-eight children.

The population in 1847 was perhaps 250, divided into several bands; in 1862 it was perhaps 200, and in 1910 it was 667.

They lived, in 1744, a long distance north-west of Lake Winnipeg; in 1847 De Smet said they were not often seen on the plains, but traveled over the mountains and through the woods, over the different branches of the sources of the Saskatchewan and Athabaska. They now live on a 69,720 acre reservation along Bow river, in the foothills of the Rocky Mountains, about 40 miles west of Calgary, Alberta, and so are often seen at Banff.

KOOTENAY

KOOTENAY, KITUNAHAN, COOTONAY, SKAISI, *Kutenai*.

THE name Kutenai is corrupted from one name they called themselves. They form a linguistic stock. They inhabit parts of southeastern British Columbia and northern Montana

and Idaho, from near Golden west of the divide south to Pend d'Oreille Lake, but once lived east of the Rocky Mountains, probably in Montana. Their hereditary enemies, the Blackfoot, drove them here and now are so amicable that they intermarry. They hunted buffalo together, but the Blackfoot are still called "bad people," the Assiniboin "cut throats," and the Cree "liars."

They are well developed, tall, and the form of the head suggests race mixture. They are moral, kind, hospitable, extreme in avoiding drunkenness and lewdness with whites. They are mentally high, can be interested and concentrated, and are not extremely emotional. Missionaries have succeeded with them.

The Lower Kootenay are more primitive and nomadic than the Upper Kootenay, and adhere less to the Catholic Church. They were river Indians, possessing dugouts and peculiar bark canoes like some used in Asia, but many have given up canoeing for skilful horsemanship. They keep nearer settlements, often serving settlers and miners. Both divisions of the Kootenay hunt and fish, the lower Kootenay depending the more on fish for food.

Society is simple, without totems or secret societies. The chief inherited limited office, which is now somewhat elective. Captives were formerly enslaved and relatives paid debts of the dead. A wergild was customary. They were polygamous; divorced women could marry again, and adultery was mildly punished. Women could own tents and utensils. Adoption was by marriage or residence.

Religion consisted of sun worship; and they believed all things had souls, which were sometimes reincarnated. The dead went to the sun, from which all would descend to Lake Pend d'Oreille to meet the Kootenay then living. The medicine-men were powerful. The Lower Kootenay paint their faces for dancing; but rarely tattoo. A reed pipe, bone, flute, and the drum were the only musical instruments known; but they had songs for dancing, gambling, and medicine. The Lower Kootenay's favorite game is a noisy variety of the wide-spread guess-stick game. The Kootenay were great buffalo hunters. Firearms have replaced bow and arrow, except as toys or for killing birds. Spearing, the basket trap, and wicker weirs were much used for fishing by the Lower Kootenay.

Skin and rush lodges were built. The vapor bath was universal. Stone hammers were used to some extent until recently. The Lower Kootenay are noted for split root watertight baskets. Their clothes resembled those of the Plains Indians rather than those of the Coast tribes, but are now changed by white influence. They are fond of white man's tobacco, but have their own willow bark. For food, medicine,

and economical purposes the Kootenay used many plants and had æsthetic appreciation of several; but most food is now obtained from the whites.

The Kootenay suffer most from consumption and ophthalmic troubles; but venereal diseases are rare. Parts of interesting maturity ceremonies still survive. The lore of the Kootenay consists chiefly of cosmic myths, mostly of the Northwest cycle, and animal and giant tales. Many coyote tales belong to the Rocky Mountains cycle, others have particulars of Siouan or Algonquian aspects. Their deluge myth is peculiar. Two of the legends, "Seven Heads" and "Lame Knee," suggest Old World analogies. The story of the man in the moon is probably borrowed from French sources.

The Kootenay are good draftsmen, although there is little in the way of pictographs and birch-bark drawings. Some make maps and are good physical geographers. Horses and buffalos are drawn characteristically lifelike and accurate. Ornamentation of moccasins and other articles is often elaborate, one motive being the Oregon grape. They make no pottery and did little wood-carving. The white man is sometimes called "stranger," as they knew him only recently and, being peaceful, had few troubles with him. The Canadian Kootenay are not yet on reservations.

In 1904 the Kootenay in British territory were reported to number 553, a decrease of about 150 in 13 years. The Kootenay have given their name to Kootenai river, the districts of East, West, and North Kootenay, Kootenai Lake, Kootanie pass in the Rocky Mountains, Kootenai County, the town of Kootenai, and to other places on both sides of the international boundary.

The following original sources give more elaborate information about the Kootenay :

Boas, Franz, First General Report on the Indians of British Columbia, in Report of the British Association for the Advancement of Science, 1889.

Chamberlain, Alexander, Report on the Kootenay Indians, in Report of the British Association for the Advancement of Science, 1892.

Chamberlain since 1892 in American Anthropologist; Journal of American Folk-lore, and American Antiquarian.

Hale, Horatio, in U. S. Exploring Expedition, VI, 1846.

Maclean, Canadian Savage Folk, 1896.

De Smet, Oregon Missions, 1847, and New Indian Sketches, 1863.

Tolmie and Dawson, Comparative Vocabularies of British Columbia, 1884.

SHUSWAP

SHUSWAP, *Sequapmuq*.

THE Shuswap form the most important tribe of the Salishan Linguistic Stock in British Columbia. They owned the country from the crest of the Rocky Mountains westward from beyond Yellow Head Pass to Donald including part of the Columbia and Fraser Valleys, the Thompson Valley and the Shuswap lake region. The Chilcotin of the Athapascan stock live west of them, the Okanagan, Thompson River, and Lillooet all also of the Salishan Stock live south and west of them. They are now on small reservations in the Kamloops-Okanagan and Williams Lake agencies.

The population is probably smaller by fifty per cent. than before the miners' rush of 1858, but there are now more than 2,000 in the Adams Lake, Bonaparte, Ashcroft, Kamloops, Deadman's Creek, Halaut, Little Shuswap Lake, North Thompson, and Spallumcheem bands at the Kamloops-Okanagan Agency; the Canoe Creek, Alkali Lake, Clinton, Fountain, Dog Creek, High Bar, Soda Creek, Pavilion, and Williams Lake bands at the Williams Lake Agency; and Kinbasket at the Kootenay Agency.

The following original sources give more elaborate information about the Shuswap :

Teit, James, *The Shuswap*, Memoirs of the Jesup North Pacific Expedition, vol. I, No. 4, 1900.

Dawson, George M., *Transactions of the Royal Society of Canada*, XI, Section II, 1892.

Boas, Franz, 6th Report to the British Association for the Advancement of Science, on the North-West Tribes of Canada, 1891.

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BLACKFOOT

BLACKFOOT, *Siksika*.

THE name Siksika, meaning "black feet," is supposed to have been derived from moccasins blackened by prairie fires; or painting worn by the Pawnee, Sihasapa, and other tribes. They are an important confederacy including the Northern Blackfoot, Bloods, and the Piegans. The Sarcee lived among them, but speak an Athapascan language. The languages belong to the Algonquian Stock. They lived in the

northern plains from the wooded North Saskatchewan river to southern Montana and from the foot of the Rockies east to 105 degrees longitude. They are now on reserves in Alberta and Montana. They were restless, aggressive, predatory, and constantly at war with all their neighbors, the Cree, Assiniboin, Sioux, Crow, Flathead, and Kootenay. They pretended friendship with the Hudson's Bay Co., and hostility, without war, to the United States.

Their culture, tipis, clothes, weapons, arts, are those of the Plains generally. They were periodically shifting buffalo hunters, whose lives were greatly influenced by that animal, and skin dressing was their great industry. They lived in close contact with Gros Ventre. They lived in moveable skin tipis and without the arts of spinning, weaving or pottery, and canoes, with no agriculture beyond raising native ceremonial tobacco. They gathered camas root, and hunted on foot until the introduction of the horse. They were noted for their herds of horses.

Each of the three divisions has its own council, elective head-chief, and Sun dance, apparently centering round the Blackfoot proper. Each was subdivided, making perhaps 45 bands or possibly gentes. They carry to extremes religious and ceremonial observances similar to those of other Plains tribes. They have a military and fraternal organization called "All Comrades," of twelve or more orders. They have many religious, war, and social dances, secret societies for each sex, and "sacred bundles," each with a ritual. Nearly every family has its own daily rites, of songs and prayers, and the adults have the "personal medicine." The Sun, and "Old Man," possibly an incarnation of the Sun, are deities. The dead were put in trees or sometimes on hill tops in sepulchral tipis.

The population about 1790, according to Mackenzie, was perhaps 9,000. Smallpox, measles, and in Montana the sudden loss of the buffalo and a reduction of rations, reduced them to about 7,000 before 1860. In 1909 officially there were 795 Blackfoot of the Running Rabbit and Yellow Horse bands living on a reservation on Upper Bow River, Alberta; 1,174 Blood and 471 Piegan in Alberta and 2,195 Piegan in Montana, totaling 4,635.

The following original sources give more elaborate information about the Blackfoot :

- Grinnell, George Bird, *Blackfoot Lodge Tales*, 1892.
- Hayden, *Ethnological and Philological Report of the Missouri Valley*, 1862.
- Schultz, *My Life as an Indian*, 1907.
- Wissler, *Ontario Archaeological Report for 1905, 1906*.

- No. 3.—Beaded Tail-piece, forming part of porcupine embroidered head-dress only worn, by men, in the Sioux dance; purchased from the southern Indians by the Blackfoot about 1890. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 16.—Fossil, regarded as sacred. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 17.—Amulet, given up on accepting Christianity. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 32.—Rosettes, with leather thongs for tying under the neck, worn by women and girls on blankets. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 33.—Woman's Beaded Belt, worn by women and girls over dress or blanket. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 35.—Collection of Men's Charms. One of many kinds used in the various forms of worship. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 36.—Man's Moccasins, of the ordinary style. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 42.—Beadwork trimming, with two plaits of natural hair, for man's shirt sleeves or trousers. Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 46.—Man's Festive Headdress, belonging to Head Chief "Old Sun." Loaned by Reverend Canon H. W. Gibbon-Stocken, Blackfoot Indian Reserve, Gleichen, Alberta.
- No. 2.—Two sculptured human Heads cut out of sandstone. From Gleichen, Alberta. Purchased.

SEKANI

ROCKY MOUNTAIN INDIANS, *Sekani*.

THE name "Sekani" means "dwellers on the rocks." These people as well as the Sarsi are of the Athapascan linguistic stock. They wander on the western slope of the Rocky Mountains in British Columbia and the Upper Peace Valley. Once in one tribe, nomadic life has separated them into distinct tribes. There are nine tribes, composed of bands each having a traditional hunting ground so poorly defined that a trespasser is not molested, though their neighbours are strict in this regard. They came from east of the mountains. They are slender, bony, and shorter than their neighbours, with narrow forehead, prominent cheek-bones, deeply sunk black almond eyes, thin upper lip, protruding lower lip, small chin and straight nose. They are of light color. None are bald. Many of them, it was said, are circumcized. Women wear nose rings. The adults are child-like. They are said to be dreaded by other Indians because they are very savage and licentious, and to be

more sullen and less frank than other Athapascans, though absolutely honest. They are believed to leave an equivalent for any thing they take.

They live completely isolated, miserably and without tents, sleeping in open brush lodges. For clothing they have only coats and breeches of Rocky Mountain goat or Rocky Mountain Sheep skins, with hair side turned in or out to suit the weather. Thin goat-skin blankets give them a decided odor. They hunt caribou, moose, lynx, bear, beaver, marmots, and rabbits for food. Fishing seems so unmanly to them that they do not eat fish.

In their loosely organized society, based on father-right, they have no chiefs. The oldest or most influential in the party advises. The dead are covered by dropping their own lodges over them, though important dead are put on scaffolding and usually covered with thin birchbark canoes, or are put in hollowed spruces, suspended from trees, or sometimes erect in hollowed trees. They burn or throw in the river, or place in trees, the clothing and weapons of the dead. They abandoned dying persons.

The population in 1820 was 1,000, in 1893 it was estimated at 1,300.

16. History of the Rocky Mountains Park

THE Rev. R. T. Rundle, was the first Missionary in the territory which is now the Rocky Mountains Park, Alberta. He reached Edmonton September 18, 1840, and Rocky Mountain House February 22, 1841. He was the first white man of which there is record to visit the present site of Banff, where he camped in August, 1841, for four or five weeks at the foot of Cascade Mountain. He returned to England in 1848.

No. 00.—Photograph of Rev. R. T. Rundle.

17. Literature of the Rocky Mountains Park

2.—MAMMALS

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- Hornaday, W. T.—Camp-fires in Canadian Rockies. Published by Chas. Scribner's Sons, N. Y.
- Seton, Ernest, Thompson—Life Histories of Northern Animals. Published by Chas. Scribner's Sons, N. Y., 1909.
- Canadian Alpine Journal—1912, special number on mammals, birds, and plants, Mount Robson region.
- Stone and Cram—American Animals. Published by Doubleday, Page & Company, Garden City, N. Y., 1905.
- Wheeler, A. O.—The Selkirk Range. Published by Department of the Interior, Ottawa, Canada, 1905.

3.—BIRDS

- Keyser, L. S.—Birds of the Rockies. Published by A. C. McClurg & Company, Chicago, 1902.
- Macoun, J. M.—Canadian Birds. Published by the Geological Survey of Canada, 1903-04.
- Macoun, J. M.—Catalogue of Canadian Birds. Published by the Geological Survey of Canada, 1909.
- Reed, Chester A.—Bird Guide, Land Birds, East of the Rockies. Published by The Musson Book Company, Ltd.
- Reed, Chester A.—Bird Guide, Water Birds, Game Birds and Birds of Prey, East of the Rockies. Published by The Musson Book Company, Ltd., 1910.

4.—FISH

- Jordan, D. S., and Evermann, B. W.—American Food and Game Fishes. Published by Doubleday, Page & Company, Garden City, N. Y., 1905.

5.—REPTILES

- Ditmars, R. L.—Reptile Book. Published by Doubleday, Page & Company, 1907.

6.—AMPHIBIANS

Dickerson, M. C.—Frog Book. Published by Doubleday, Page & Company, 1906.

8.—INSECTS

Howard, L. O.—Insect Book. Published by Doubleday, Page & Company, 1905.

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9.—PLANTS

Brown, S., and Schäffer, Mrs. Chas.—Alpine Flora of the Canadian Rocky Mountains. Published by G. P. Putnam's Sons, N. Y., 1907.

Henshaw, Julia W.—Mountain Wild Flowers of Canada. Published by Ginn & Company, Boston, 1906.

Longyear, B. O.—Rocky Mountain Wild Flower Studies. Published by B. O. Longyear, Fort Collins, Colorado, 1909.

Macoun, J. M.—Canadian Plants. Published by Geological Survey of Canada, 1883-1902.

Coulter, J. M., and Nelson, A.—New Manual of Botany of the Central Rocky Mountains; revised by Aven Nelson. Published by American Book Company, N. Y., 1909.

Farr, Edith M.—Contributions to Catalogue of Flora of Canadian Rocky Mountains and Selkirk Range. Published by University of Pennsylvania.

Britton, N. L.—Manual of the Flora of the Northern States and Canada. Published by Henry Holt & Company, N. Y., 1901.

Gray, Asa—New Manual of Botany, 7th edition. Published by American Book Company, N. Y., 1907.

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